

ENERGY EFFICIENCY STANDARDS

HEARING
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED TWELFTH CONGRESS
FIRST SESSION

TO

RECEIVE TESTIMONY ON S. 398, A BILL TO AMEND THE ENERGY POLICY AND CONSERVATION ACT TO IMPROVE ENERGY EFFICIENCY OF CERTAIN APPLIANCES AND EQUIPMENT, AND FOR OTHER PURPOSES, AND S. 395, THE BETTER USE OF LIGHT BULBS ACT

MARCH 10, 2011



Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

66-124 PDF

WASHINGTON : 2011

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512-1800; DC area (202) 512-1800
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ENERGY EFFICIENCY STANDARDS

THURSDAY, MARCH 10, 2011

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 9:31 a.m. in room SD-366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. OK. Thank you all for coming. Welcome today's witnesses. We're here today to talk about 2 bills regarding the Department of Energy's Appliance Energy Efficiency Program.

S. 398, to amend the Energy Policy and Conservation Act to improve the energy efficiency of certain appliances and equipment.

S. 395, to repeal certain amendments to the Energy Policy and Conservation Act with respect to light bulb technology. These were provisions that were passed in 2007 and are now proposed for repeal.

The first bill is an updated version of the Appliance Standards legislation that nearly passed the Senate by unanimous consent in December. It combines provisions that were reported from this committee as a part of the America Clean Energy Leadership Act, ACELA, with amendments to ACELA that were reported in May 2010 and with more recent agreements as well. The bill would increase or establish new efficiency standards for nearly 20 types of appliances from air conditioners to water dispensers.

This legislation would continue to protect and create jobs by reducing regulations on business through the preemption of multiple State standards with simpler, more stable, more predictable Federal regulations. The legislation would also reduce the power and water bills of American households and businesses, free those savings for other uses. Make our economy stronger and more competitive and help protect the environment by avoiding the environmental impacts of reduced energy production.

Enactment of this legislation would continue a bipartisan tradition that was started in this committee in 1987. It was repeated in 1988 and 1992 and 2005, again in 2007. That tradition is a tradition of enacting consensus appliance standards that have been negotiated among manufacturers and energy efficiency advocates and consumer groups. Overall it's estimated that by 2030 the standards will reduce national electrical demand 12 percent below what it otherwise would be.

The second bill on today's agenda, S. 395, would repeal the efficiency standards for general service incandescent light bulbs and other provisions of Subtitle B3 of the Energy Independence and Security Act of 2007. The proposal is of concern to me because it goes against this tradition that I spoke about of broad bipartisan support for consensus appliance standards. I hope that today's record will confirm, as I understand, that not only will consumers continue to be able to buy incandescent bulbs that look the same as those they currently buy but those bulbs will provide the same quality of light as tradition incandescent bulbs. These bulbs will last longer, use less energy and save consumers money.

Let me defer to Senator Murkowski for her comments before we hear from our witnesses.

**STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR
FROM ALASKA**

Senator MURKOWSKI. Thank you, Mr. Chairman. Good morning. I appreciate you convening the hearing today. We certainly have two very different bills to discuss.

The first one, the Implementation of National Consensus Appliance Agreements Act or INCAA, has been through several iterations, hearings and mark ups over the past 2 years. The bill contains consensus agreements that will set new efficiency standards for certain product classes of appliances.

The second bill before us, the Better Use of Light Bulbs Act—which has a good acronym, you have to admit, “BULBS”—seeks to repeal some lighting standards that became law as part of the Energy Independence and Security Act of 2007.

The implementation of National Consensus Appliance Agreements, which I have co-sponsored with you, Mr. Chairman, notably contains important new standards for outdoor lighting, furnaces and air conditioners. These proposed standards were the result of months, and in some cases, years, of hard work and negotiations amongst stakeholders, some of whom we will hear today. I think we recognize that while no piece of legislation is perfect, the time and effort put into these agreements is an important step forward. It certainly shows a sustained commitment to comprehensive bipartisan energy legislation.

It is also my opinion that this bill goes a long way toward improved efficiency and therefore improved energy security. I applaud the efficiency advocates and the industry representatives for their very, very hard work on this. We knew it. We know that was a long process.

Mr. Chairman, as it relates to the second bill, I think it's fair to say that light bulbs have really become the hot topic around Capitol Hill now. They have become perhaps more of a symbol, possibly a very visible, a very tangible symbol of the overreach of big government. I can certainly sympathize with that sentiment.

There have been countless news stories about what the new standards, which will be phased in over the next several years, will mean to the average American family. I'm interested in this debate on a personal level. My husband and I seem to have ongoing debates. I won't classify them as arguments. But debates about the

effectiveness and where we need to go in our household when it comes to light bulbs.

Everybody has had some kind of an experience that they relate to with CFLs. Our family is no exception. One of us hears a buzz or a flicker and blames it on the light bulb.

I think it's fair to say that the light is perhaps not the same quality as the incandescent bulb. They contain mercury which we all know is a hazard. I'm told though that better technology exists, and while the standard light bulb that we know and love may soon be phased out, there are new products that are strikingly similar to the old ones and have the added benefit of saving electricity.

So I'm looking forward to hearing what our witnesses have today and the robust debate that we will have over our lighting efficiency.

Thank you.

The CHAIRMAN. Thank you very much.

For the record at this point I would include a statement that Senator Enzi has provided. He's the prime sponsor on S. 395.

Also a letter from the Consumer's Union, and a letter from the National Association of State Energy Officials.*

[The prepared statement of Senator Enzi follows:]

PREPARED STATEMENT OF MICHAEL B. ENZI, U.S. SENATOR FROM WYOMING

Chairman Bingaman and Ranking Member Murkowski, thank you for allowing me to share my thoughts about S. 395, the Better Use of Light Bulbs (BULB) Act. I introduced this legislation because lighting in our homes should be about personal choice and not about federal mandates.

The legislation that was passed in 2007 set a standard that effectively bans the traditional incandescent light bulb. I opposed the legislation when it was passed and I continue to oppose it today. The light bulb mandate phases out traditional incandescent light bulbs in California this year and will begin to phase out traditional incandescent light bulbs in the rest of the United States in 2012. It is the sort of "Washington knows better" approach that was soundly rejected by the American people. It should also be rejected by members of the United States Senate.

The de-facto ban on the traditional incandescent light bulb was intended to save on energy costs and limit pollution by replacing one light bulb with another. Unfortunately, as with many regulations, there are unintended consequences. In this case the alternative bulbs are more expensive and the most common alternatives contain mercury, which is harmful even in the smallest amounts. We should not allow this mandate to stand.

Twenty-seven of my Senate colleagues agree with me—they cosponsored the BULB Act. Six of the original cosponsors are members of the Energy Committee. Rather than allowing members of Congress to dictate what light bulbs must be used in every American's home, my legislation allows the market to work. It allows every American to decide what light bulbs work best for them. If a rancher in Wyoming wants to use compact fluorescent light bulbs (CFLs) because they prefer the light from CFLs, passage of my bill allows that to happen. Passage of the BULB Act also allows a shoe store in Houston to use traditional incandescent bulbs if they believe the light from the traditional bulb makes their product look better. It gives consumers the option to decide what works best for them and avoids that one-size-fits-all approach that Washington should reject.

Some argue that this mandate is essential to foster innovation. They tell us that we are on the verge of new lighting technology that will revolutionize light bulbs, saving consumer money and saving energy. I hope this is the case. However, if the new light bulbs that are on the horizon are significantly better than the bulbs that exist now, the American people will buy them. If a product of equal quality is available for a comparable cost, the American people will buy them on their own. It isn't our job to force them from one product to another.

It has also been argued that this standard is essential because individual states set their own standards. I would respond that those states are wrong to do so and

*See Appendix II.

we should not encourage such behavior by forcing a Washington mandate into every single home in America. If legislators in a state like California want to force a light bulb mandate on its citizens, that's fine by me. However, their decision should not result in a federal mandate that forces citizens in my home state and every other state to buy more expensive and potentially harmful light bulbs.

If someone wants to fill their home or business with the light from the new bulbs, they should be able to do so. I also think it is fine if someone wants to buy an old-fashioned bulb because it works better for them. If left alone, the best bulb will win its rightful standing in the marketplace. Government doesn't need to be in the business of telling people what light bulb they have to use.

I appreciate the opportunity to share my thoughts and hope you will join me in supporting consumer choice in our homes.

The CHAIRMAN. We have 2 panels today.

The first panel is a representative from the Department of Energy.

Ms. Kathleen Hogan, who is the Deputy Assistant Secretary for Energy Efficiency in the U.S. Department of Energy. Why don't you go right ahead, Ms. Hogan with your testimony. We will have some questions of you. Then we will introduce the second panel after you're complete.

Go right ahead.

STATEMENT OF KATHLEEN HOGAN, DEPUTY ASSISTANT SECRETARY, ENERGY EFFICIENCY, DEPARTMENT OF ENERGY

Ms. HOGAN. Thank you and good morning, Chairman Bingaman and Ranking Member Murkowski and members of the committee. Thank you for the opportunity to appear today to discuss S. 395 and S. 398. As you all know, energy efficiency is an immediate, economically responsible way to increase the Nation's energy security while protecting our environment. Appliance standards, in particular, are a highly cost effective way for advancing energy efficiency. Some of the greatest opportunities for energy savings are in the appliances and products that consumers and businesses use every day.

I have submitted some detailed comments on the 2 bills that are the subject of today's hearings, but I'd like to take this opportunity just to briefly outline the Department's position on these bills for the committee.

So first there is the bipartisan Implementation of National Consensus Appliance Agreements Act of 2011 or INCAA. I'll call it INCAA, which codifies agreements that were negotiated, signed and promoted by a cross section of stakeholders representing consumer advocacy groups, manufacturers, manufacture trade associations and energy efficiency advocacy organizations, all of whom support this bill. The negotiated consensus agreements would establish energy conservation standards for 14 products.

Because many of these standards do overlap with several DOE rules currently under development the Department cannot present a position today that would presuppose the level of the final standards. However, initial DOE analyses of the types of improvements that are suggested here do show the opportunity for significant net benefits to consumers and businesses on the order of billions of dollars. We also know that manufacturers and manufacture trade associations representing the vast majority of manufacturers in each of the appliance markets recognize that they too would benefit from

these consensus agreements and clearly have spent significant efforts in getting to the agreements that we now have before us.

So INCAA would provide regulatory certainty.

Would help industry plan investments in manufacturing the products that would meet the standards.

Further these standards would continue to promote innovation by setting minimum performance thresholds rather than prescribing specific approaches.

So now let me move to the second bill. The Better Use of the Light Bulbs Act or the BULB Act, would repeal portions of the bipartisan Energy Independence and Security Act of 2007 which does include higher efficiency standards for general service incandescent lamps that would phase in in the coming years. The first phase would begin in January 2012 and would require the 100 watt bulb to be roughly 25 percent more efficient than it is today.

DOE strongly supports the EISA 2007 standards and joins with industry and energy efficiency organizations in opposing the BULB Act. The EISA lighting standards will save families and businesses money and help protect the environment.

Lighting represents roughly 10 percent of a typical family's electric bill. We estimate that using the EISA compliant light bulbs will save consumers nearly \$6 billion in 2015 alone. An individual household that would upgrade, say, 15 light bulbs could save about \$50 per year.

Many Americans are already familiar with the efficient light bulbs that would be compliant with EISA. According to a recent USA Today Gallup poll, nearly 3 out of 4 Americans report having replaced inefficient bulbs with our more efficient options over the last few years. Eighty-four percent of them report being satisfied with the newer bulbs.

Besides repealing the lighting standards, the BULB Act could also jeopardize the Federal Trade Commission's authority to issue labels on light bulbs similar to the nutrition labels on food products which Americans use every day. This label would contain very useful information to the consumers: annual energy costs, the useful life, light quality and energy consumption. Repealing this provision would remove a very important tool for consumers in making informed lighting choices. The BULB Act could also repeal FTC authority to provide labels on consumer electronics or other products not specifically identified in the Energy Policy and Conservation Act.

Finally, should these standards be repealed, manufacturers may see a greater regulatory burden as States could follow California's example and implement their own lighting standards, creating confusion among consumers and uncertainty and costs for industry. Industry has already prepared substantially for these standards. New factories producing more efficient lighting choices have opened, and old factories have been retooled to produce these more efficient bulbs. There's great value in one national standard creating one national market for these bulbs.

So in summary, INCAA contains provisions that represent industry, advocate and consumer consensuses and according to our analyses, would save consumers billions of dollars.

The BULB Act on the other hand would cost consumers and manufacturers money and result in higher energy use and higher bills.

So thank you again for the opportunity to share the Department's views on these 2 pieces of legislation. I would be happy to answer any questions that you may have.

[The prepared statement of Ms. Hogan follows:]

PREPARED STATEMENT OF KATHLEEN HOGAN, DEPUTY ASSISTANT SECRETARY,
ENERGY EFFICIENCY, DEPARTMENT OF ENERGY

Chairman Bingaman, Ranking Member Murkowski, Members of the Committee, thank you for the opportunity to discuss the Implementation of National Consensus Appliance Agreements Act of 2011 (S.398) and the Better Use of Light Bulbs Act (S.395).

In June 2009, President Obama said, "One of the fastest, easiest, and cheapest ways to make our economy stronger and cleaner is to make our economy more energy efficient."¹ Energy-conserving appliance standards are one of the significant steps the Administration has taken to save energy in homes and businesses nationwide, and pave the way toward a clean energy future for our country.² Since January 2009, the Department of Energy has finalized new efficiency standards for more than twenty household and commercial products, which are projected to cumulatively save consumers between \$250 billion and \$300 billion over the next 20 years.³ These standards can provide an immediate and economically responsible way to increase the nation's energy security while protecting the environment. Improvements in energy efficiency can be made today to yield significant near-term and long-term economic and environmental benefits for the nation.⁴

The U.S. Department of Energy (DOE) is pleased to work with you and your fellow Committee Members to make our homes, offices, factories, vehicles, and appliances more energy efficient. The Department's energy efficiency efforts include promoting and implementing energy efficiency policies and practices; strengthening consumer education and outreach on energy efficiency as a cost-saving resource; and accelerating market adoption of energy efficient technologies that save families and businesses money.

My comments focus on two pieces of pending legislation related to energy efficiency standards. First, I will discuss the Implementation of National Consensus Appliance Agreements Act of 2011 before turning to the Better Use of Light Bulbs Act.

IMPLEMENTATION OF NATIONAL CONSENSUS APPLIANCE AGREEMENTS ACT OF 2011
(S.398)

S.398 codifies agreements that were negotiated, signed, and promoted by a cross-section of stakeholders representing consumer advocacy groups, manufacturers, manufacturer trade associations, and energy efficiency advocacy organizations, all of whom support this bill. The negotiated consensus agreements would establish energy conservation standards for 14 products, several of which are in the midst of DOE's ongoing standards and test procedure rulemakings.

In 2007, Congress recognized the importance of negotiated consensus standards, amending the Energy Policy and Conservation Act (EPCA) to allow for an expedited rulemaking process in the event a representative group of stakeholders could reach agreement. Because several DOE rules currently under development and review overlap with the proposed consensus standards, the agency cannot at this time present a position that would presuppose the level of the final standards outcome; however, the analyses accompanying the proposed rules for these standards suggested potential net benefits of tens of billions of dollars in fuel savings and lower greenhouse gas emissions.

Manufacturers and manufacturer trade associations representing the vast majority of the manufacturers in each appliance market recognize they would also benefit from consensus agreements. S.398 could provide regulatory certainty for industry

¹ <http://www.whitehouse.gov/the-press-office/Remarks-by-the-President-on-Energy/>

² <http://www.whitehouse.gov/issues/energy-and-environment>

³ <http://www.energy.gov/news/9582.htm>

⁴ See, for example: McKinsey and Company (2007). Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost? (<http://www.epa.gov/cleanenergy/documents/suca/cost-effectiveness.pdf>) and Lazard Associates. Feb. 2009. Levelized Cost of Energy Analysis Version 3.0.

and could reduce litigation risk by setting the time table and accompanying requirements for industry to meet, all of which could help manufacturers in planning their investments when manufacturing compliant products.

S.398 could also allow DOE to respond to industry and efficiency advocates' requests for greater technical flexibility in DOE test procedures and energy conservation standards by giving the department the authority to regulate based on multiple efficiency descriptors. These additional tools could ensure that the metrics DOE uses in its standards remain flexible and meaningful as industry continues to create newer and more innovative products.

S.398 appears to prescribe some duplicative procedural requirements that could put an unnecessary resource burden on DOE. For example, the bill's requirement that DOE respond in a published rulemaking to any petition requesting amended standards is unnecessary given that DOE already must review each standard every six years—and the evaluation period begins years before that. Similarly, the bill adds provisions giving stakeholders the right to petition for a test procedure review, a right they already hold under the current law.

In summary, S.398 contains provisions that represent industry, advocate, and consumer consensus and that could streamline DOE's standard-making process. Because several DOE rules currently under OMB review overlap with the proposed consensus standards, the agency cannot at this time present a position that would presuppose the final outcome of the rulemaking deliberative process.

BETTER USE OF LIGHT BULBS ACT (S.395)

This legislation would repeal portions of the bi-partisan Energy Independence and Security Act of 2007 (EISA), which includes higher efficiency standards for general service incandescent lamps that will phase in over the coming years. The first iteration of the standards is scheduled to take effect on January 1, 2012, and will require 100 Watt bulbs to be roughly 25 percent more efficient.

The Administration strongly supports these standards, and joins industry and energy efficiency organizations in opposing S.395. The EISA lighting standards are projected to save families and businesses money, empower consumers with lighting choices, and help protect the environment. DOE projects that if S.395 were enacted, U.S. primary energy consumption would increase by 21 quads and greenhouse gas emissions could increase by more than 330 million metric tons⁵ over the next 30 years.

The EISA standards may generate significant savings for consumers. Lighting represents about 10 percent of a typical family's electric bill.⁶ Using EISA-compliant light bulbs could save consumers nearly \$6 billion in 2015 alone.⁷ A household that upgrades 15 inefficient incandescent light bulbs could save about \$50 per year.⁸

DOE projects that these standards will help Americans further recognize the savings potential they are already beginning to realize. According to a recent USA TODAY/Gallup poll, nearly three out of four Americans say they have replaced inefficient bulbs with compact fluorescent lights (CFLs) or light-emitting diodes (LEDs) over the last few years, and 84 percent of those Americans are very satisfied or satisfied with their newer bulbs.⁹

Further, since the standards are performance-based, consumers will be able to choose from an array of efficient bulbs, including incandescent halogens, CFLs, and LEDs. They establish technology-neutral, minimum requirements around the amount of light delivered per unit of energy consumed, which is helpful for consumers.

S.395 could jeopardize the required application of an important label on lighting products, removing a key tool for consumers to make informed choices. For decades, Americans chose light bulbs based on how much energy they consume (watts) instead of on how much light they emit (lumens). Selecting a light bulb based on lumens will help consumers choose how much light they want while saving money by making smarter, energy-saving choices. To help consumers better understand lumens, the Federal Trade Commission will release a new label (shown at the right) for light bulbs this summer, similar to the nutrition labels on food products with

⁵ <http://www1.eere.energy.gov/buildings/appliance—standards/pdfs/en—masse—tsd—march—2009.pdf>

⁶ <http://www.energysavers.gov/your—home/lighting—daylighting/index.cfm/mytopic=11975>

⁷ U.S. Department of Energy analysis (2011), assuming the light bulb is on for two hours per day, an electricity rate of \$0.11 per kilowatt-hour, and comparing a 100 Watt incandescent to a 26 Watt CFL. No rebound effect is assumed.

⁸ U.S. Department of Energy analysis (2011)

⁹ USA Today. February 17, 2011 <http://content.usatoday.com/communities/greenhouse/post/2011/02/pollamericans-ok-newer-light-bulbs/1>

which Americans are familiar.¹⁰ The label will not only contain lumen output, it will also provide the estimated operating cost of a bulb for a year, and the color quality of the light, which can range from the warm light to cooler bluish light. Energy-saving options from efficient incandescent bulbs to CFLs to LEDs can all be found on the warm side of the spectrum, providing the same light as less-efficient bulbs.

At DOE, we will work with partners to provide accurate and consumer-friendly information through our website, public service announcements, and other media. California began the transition to energy-saving lighting in January 2011, so DOE will analyze the State's experience and will adopt best practices to help consumers become comfortable with the national lighting transition. DOE also plans to work with retailers and consumer groups to help them understand the new standards and emphasis on lumens.

There is broad consensus support for the EISA standards within the lighting industry, which continues to prepare to implement them. New factories producing more efficient lighting choices have opened. Old factories have been retrofitted to produce more efficient bulbs. Further, should these standards be repealed by S.395, many states could implement their own lighting standards. This could generate confusion among consumers in the market and would force the lighting industry to face a complex patchwork of different lighting standards in different areas, leading to higher regulatory compliance costs. A uniform national standard ensures a national market for efficient bulbs.

The EISA lighting standards may also provide incentives for innovation and economic competitiveness. Over the past ten years, portions of the lighting market have dramatically evolved, in part due to lighting efficiency requirements. For example, linear fluorescent lamp standards enacted by the Energy Policy Act of 2005, may have contributed to the development of a larger market for higher-efficiency alternatives. Since the enactment of EISA just three years ago, many new halogen, CFL, and LED lamp products have appeared on the market, providing consumers with even more choices in lighting. Over the past 20 years, CFL prices have decreased about 10 fold (approximately \$20 in 1990 to \$2.50 today).¹¹ So companies are continuing to innovate and raise the bar for energy efficient lighting while lowering costs, and DOE believes the EISA standards play a part in that trend.

CONCLUSION

In summary, S.398 contains provisions that represent industry, advocate, and consumer consensus, that could streamline DOE's standard-making process. S.395, on the other hand, could cost consumers and manufacturers money and detrimentally affect the nation's economy, energy security, and environmental imperatives.

DOE is continually working to seize the opportunities energy efficiency offers, saving families and businesses money by saving energy. There are many opportunities to further improve energy efficiency in appliances and products that consumers and businesses use every day. Therefore, the Department continues to strive to establish cost-effective commercial and residential appliance standards. DOE is constantly attempting to modernize, improve, and tailor the appliance standards to respond to improvements in energy efficient technology, while being responsive to legislative and regulatory requirements.

Thank you again for the opportunity to offer the Department's views on these proposed pieces of legislation. I am happy to answer any questions Committee Members may have.

BACKGROUND: A SECTION BY SECTION DESCRIPTION AS EACH RELATES TO THE APPLIANCE STANDARDS PROGRAM ACTIVITIES

S.398—IMPLEMENTATION OF NATIONAL CONSENSUS APPLIANCE AGREEMENTS ACT OF 2011

Sec 2. Energy Conservation Standards

(a) Multiple efficiency descriptors: This section amends the definition of energy conservation standard to allow DOE to consider multiple efficiency descriptors for the same product. Currently, DOE does not have authority to regulate based on multiple efficiency descriptors for many of its covered products. The lack of such authority has prevented DOE from responding positively to stakeholder requests for the use of multiple efficiency descriptors. This provi-

¹⁰ <http://www.ftc.gov/opa/2010/06/lightbulbs.shtm>

¹¹ <http://www.energystar.gov/ia/products/downloads/CFL—Market—Profile.pdf>

sion would allow DOE greater flexibility in the technical formulation of test procedures and energy conservation standards.

(c) Regional standards for central air conditioners and heat pumps: This section specifies regional standards through the adoption of the consensus efficiency requirements for central air conditioners and central air conditioning heat pumps.

(c) Standards for niche types of central air conditioners and heat pumps (i.e., through-the-wall and small duct high velocity systems): This section implements the standard provided by DOE's Office of Hearing and Appeals through exception relief for through-the-wall and small duct high velocity systems. In the absence of legislation permanently adopting the efficiency levels provided in the exception relief for these products or other legislative change addressing anti-backsliding in this context, DOE would not be able to consider amended energy conservation standards for these product types because the current Federal standards exceed the energy efficiency potential of these products due to size constraint limitations. This section provides a permanent solution to the current exception relief and provides DOE with the potential possibility of conducting a rulemaking in the future for these products.

(e) Regional standards for furnaces: This section specifies regional standards through the adoption of the consensus efficiency requirements for oil-fired and weatherized residential furnaces.

(f) Allowance for State building codes to exceed Federal standards: This section provides a pathway for State buildings codes to exceed Federal standards for certain types of products and new construction applications. This section implements a portion of the consensus agreement for residential furnaces and central air conditioners and heat pumps, which sets these more stringent levels as targets for building codes. Currently, DOE cannot consider different standards for new and existing construction either through building codes or Federal standards. DOE analyses of energy efficiency standards in many cases demonstrate that high efficiency products may be more economically justified in new buildings compared with replacement product applications. This is because some efficiency technologies require not only changes in the equipment itself but also in how the equipment is installed in a building. Since whole-building standards can address both equipment features and the building system within which they operate, such codes can sometimes address the efficiency improvements more economically than equipment standards alone. Currently due to Federal preemption, building codes cannot take advantage of such economically viable energy efficiency opportunities because they cannot specify equipment standards that are more stringent than Federal standards. Instead, building codes can only specify more stringent requirements for energy-efficient appliances as one pathway to meeting the code's requirements, and an option to install appliances which meet the national energy conservation standard levels must remain available.

Sec. 3. Energy Conservation Standards for Heat Pump Pool Heaters.

This section provides DOE with the authority to regulate and sets the initial test procedure and standard for heat pump pool heaters. DOE's current regulatory program only includes gas heaters for pools and spas. This section would expand DOE's authority to include a comparable type of equipment for households in warmer climates and with electricity-only energy supplies. It is unclear if this section would apply to electric pool and spa heaters that do not utilize heat pump technologies.

Sec. 4. GU-24 Base Lamps.

This section prohibits incandescent lamp designs for use with GU-24 sockets and prohibits the use of socket adaptors to convert a GU-24 socket to any other socket type. The GU-24 socket is a pin-based design that is an alternative to the standard Edison socket that is commonly used for incandescent bulbs. The GU-24 socket is commonly used with certain designs of compact fluorescent lamps.

Sec. 5. Bottle-Type Water Dispensers, Commercial Food Holding Cabinets and Portable Electric Spas.

This section adds bottle-type water dispensers, commercial food holding cabinets and portable electric spas to the Appliance Standards Program and establishes energy conservation standards for each product, based on the existing standards adopted by the California Energy Commission (CEC).

Sec. 6. Test Procedure Petition Process.

This section establishes a petition process where parties can petition for a rulemaking to amend the existing test procedures. Parties already have the right to pe-

tion for a rulemaking to amend the existing test procedures, so this provision appears duplicative.

Sec. 7. Refrigerator-Freezer, Clothes Washer, and Clothes Dryer Test Procedures.

This section requires DOE to finalize the amendments to the refrigerator, refrigeratorfreezer and freezer test procedures DOE proposed in December 2010 within 90 days of enactment of the legislation. Additionally, this section requires DOE to publish an amended test procedure for clothes dryers no later than 180 days of enactment of the legislation, which is limited to considering amendments resulting from the testing of dryers with automatic termination controls. Lastly, this section requires DOE to publish an amended test procedure for clothes washers.

Sec. 8. Credit for Energy Smart Appliances.

This section would require the Environmental Protection Agency (EPA) to decide whether to update ENERGY STAR criteria to incorporate smart grid and demand response features. While this provision may seem to only affect EPA, EPA uses DOE's test procedures to administer the ENERGY STAR program for many of DOE's regulatory products. This could have a significant impact on DOE if amendments to these test procedures are needed to support EPA in these efforts.

Sec. 9. Study on Video Game Consoles.

This section would require DOE to conduct a study on energy use and opportunities for energy savings for video game consoles.

Sections. 10, 11, 13, 14 and 15. Refrigerator, Room Air Conditioner, Clothes Dryer, Clothes Washer, and Dishwasher Standards.

These sections would adopt the consensus appliance standards recommendations for certain types of home appliances.

Sec. 12. Water heater efficiency descriptor.

This section includes a provision, which would require the Department of Energy to establish a uniform efficiency descriptor and test method for covered water heaters by issuing a final rule no later than 180 days after enactment. DOE's current regulatory program establishes separate efficiency descriptors, test procedures, and standards for covered residential and commercial water heaters based on characteristics, such as rated storage volume and input ratings. This bill would provide DOE with more flexibility as compared to the current regulatory scheme for regulating different types of covered water heaters (i.e., both residential and commercial) using the same metric and test procedure.

Sec. 16. Petition for Amended Standard.

This section would require DOE to publish a final rule or determination within three years of receipt of a petition for rulemaking to amend an existing energy efficiency standard. This requirement, if enacted, would add a seemingly unnecessary burden on DOE, since it is already required to review standards every six years to determine whether they warrant amendment.

Sec. 17. Prohibited Acts.

Currently, DOE's authority to enforce its energy and water conservation standards is limited to manufacturers, including importers, engaged in specific conduct. This provision would expand DOE authority to include distributors, retailers, or private labelers in addition to manufacturers and importers from offering for sale or to distribute non-compliant products. This would give DOE more flexibility in enforcing its regulatory program.

Sec 18. Outdoor Lighting.

This section would give DOE authority to set minimum efficiency standards for additional types of commercial, industrial, and outdoor lamps. Specifically, the section would establish minimum efficacy standards for certain high-output double-ended quartz halogen lamps and end production of general purpose mercury vapor lamps. Alternative lighting options that meet these standards are commercially available. These provisions are also consistent with the on-going DOE activities to set efficiency standards for particular high intensity discharge lamps and lamp ballasts.

Sec. 19. Standards for Commercial Furnaces.

This section would adopt and expand DOE's authority to include additional prescriptive requirements for commercial furnaces. Currently, commercial furnaces are only subject to energy efficiency requirements because DOE does not have the au-

thority to consider dual-metrics for this type of equipment. Gas-fired and oil-fired furnaces that meet the standards in this section are commercially available.

Sec. 20. Standards for Over the Counter, Self-Contained Medium Temperature Commercial Refrigerators.

Over the counter, self-contained medium temperature commercial refrigerators are those refrigerators that are used in retail establishments to display fresh food products. Given the design of the products, it is very difficult for them to meet the standards that are scheduled to go into effect on January 1, 2012. Under current law, DOE cannot recall these standards, as back-sliding is explicitly prohibited by EPCA. This section of the legislation would adjust the Federal standards for these certain types of commercial refrigeration equipment to lower efficiency levels.

Sec. 21. Motor Assessment.

This section would require DOE to collect information on electric motor manufacture, shipment and sales. The Census Bureau previously collected this data, but it has since discontinued those efforts. This task falls beyond the normal purview of the Energy Efficiency and Renewable Energy Office, but the Energy Information Administration in DOE may be capable of performing such assessment. Based on the Assessment, DOE would be required to establish a national program to increase awareness of motor efficiency.

Sec. 22. Study on Compliance with Standards.

This section would require DOE to conduct a study on manufacturer compliance with energy efficiency standards.

Sec. 23. Study on Direct Current Electricity Supply.

This section would require DOE to conduct a study on the costs and benefits of direct current electricity. This study would be the responsibility of the Office of Electricity Reliability in DOE.

Sec. 24. Technical Corrections.

This section would make numerous technical corrections, many of which DOE has identified as necessary, and none of which DOE identifies as objectionable.

The CHAIRMAN. Thank you very much. Let me start with questions.

Let me just alert members when we do get eight members here as we hope we will shortly. We're going to just interrupt the questioning to vote the issue of whether to close next Tuesday's meeting of the committee related to cyber security. I'll make a motion to do that because we're advised that much of the information that will be presented at that meeting to the committee has national security implications and we would be well advised to have that as a closed meeting next Tuesday. So we'll interrupt things to vote on that when and if we get 8 members.

But Ms. Hogan, let me ask you a couple of questions. Your testimony makes some positive statements about the INCAA, as you call it, S. 398. You say in your testimony that it would provide regulatory certainty for industry, would reduce litigation risk and that it contains provisions that could streamline DOE standard making process.

I also though, pick up that you have not taken a formal position on this legislation. Is it fair to say that the Administration is supportive? Are you expecting to come out with a formal position? What is the status on that?

Ms. HOGAN. I believe it is fair to say that we are generally supportive of this provision. But in terms of coming out with a formal statement I will take that back and express your interest in the Administration coming forward with that. We would hope to provide that as soon as possible.

[The information referred to follows:]

Because many of the proposed standards in INCAAA overlap with DOE's ongoing rulemakings, the Administration is unable to take a formal position on this bill, as doing so would presuppose the result of DOE's rulemakings. However, DOE and the Administration are both firmly committed to the energy and money savings potential of appliance standards in general. Further, DOE's initial analyses of these specific standards indicate that they have the potential to save billions of dollars while creating regulatory certainty for manufacturers throughout the country.

The CHAIRMAN. In the point that you make about how this legislation could streamline DOE's standard making process is there any way to estimate savings that could be expected to result from the streamlining either within the Department of Energy or in industry or otherwise?

Ms. HOGAN. Yes. We do see that there are opportunities for streamlining due to some of the provisions in this bill. We have not yet developed such an estimate. But with your interest we would be happy to work on such an estimate and get back to you on that.

[The information referred to follows:]

Several of the appliance standards in INCAAA are currently being worked on by DOE in its ongoing standards and test procedure rulemakings. The passage of INCAAA would therefore streamline the creation of these standards, reducing the amount of time, money, and resources that DOE would need to devote to bring these standards to market. This would enable DOE to shift those resources to other activities, providing more bang for the taxpayers' buck. The exact amount of savings that would result from streamlining these standards is difficult to quantify, however, since it depends in large part on the timing of INCAAA's passage. All of DOE's work on these standards will be completed by June 30, so if INCAAA was passed in the next few weeks, it would save up to two months or more of work on these standards. Even if INCAAA were passed after June 30, it would still speed up the timeline to implement these standards, enabling consumers to realize energy savings sooner.

The CHAIRMAN. OK.

Your point about S. 395, the BULB Act and the effect it would have. Now my understanding is California has adopted standards related to lighting, light bulbs, but that those are not currently in effect because of the Federal law that we have passed. Am I right in assuming that if we repeal the Federal law than the California standards would once again be in effect? Is that your understanding of how it would work?

Ms. HOGAN. Actually the California standard is in effect as we speak. They are leading the rest of the Nation by about a year. But there is language in EISA 2007 that preempts other States from going forward with their own standards once a national standard take effect and as the national standard in EISA 2007 rolls in it would quickly align with the California standard.

So I think the bottom line is if these provisions from EISA 2007 are repealed it will give other States the opportunity to follow in California's footsteps. If we look to the past decade or so what we see is that many, many times when California has gone forth and set a standard many other States followed in California's footsteps, creating a patchwork of markets across our country. I think as we all think back to the genesis of the appliance standards program to begin with, that's really one of the reasons folk all come together around national standards is to avoid such a patchwork of markets.

The CHAIRMAN. Alright.

Senator Murkowski.

Senator MURKOWSKI. Thank you, Mr. Chairman.

Ms. Hogan, welcome. Thank you for your testimony.

You had mentioned in your comments that there are several DOE rules that are under development and you have an overlap situation with the consensus standards that are contained in INCAA. When do you expect these standards to be finished?

Ms. HOGAN. Many of the standards that we are working on where there is overlap we have deadlines this summer that we are working aggressively to meet.

Senator MURKOWSKI. OK. In the process of implementation of a standard, how long does something like this take?

Ms. HOGAN. The process of developing a standard is a lengthy undertaking because we have to go through the process of doing all the technical work and working with the private sector to make sure we have the best available technical information upon which to create a standard. It can start with the development figuring out how you measure the energy consumption of a product, and how to test on an apples to apples basis. Frequently we need to develop the test procedure first and then go and have a good discussion about where to set the levels that deliver the greatest savings to consumers.

So that can be a 2-year or so process depending on where we start and what type of information is available in the marketplace when we take on a rulemaking process.

Senator MURKOWSKI. Do we have any idea then as to the cost that would be associated as you try to implement the standards over a several year process—

Ms. HOGAN. In terms of our efforts to develop standards the—we can develop those estimates. It can vary a little bit by product category and the technical complexity. But we would be happy to develop some of those numbers for you and show you that range.

[The information referred to follows:]

The costs to DOE and outside parties of implementing appliance standards varies according to the number of stakeholders, the complexity of the standard, and the length of negotiations. As an example, the water heater rulemaking for amended standards published in April of 2010 cost \$5 million for DOE to complete. Estimates indicate that outside parties may have to spend up to \$95 million on conversion costs to comply with the water heater standard. In comparison, the standard was estimated to save 2.58 quads of energy and save consumers \$1.39 billion, using a discount rate of 7 percent, and \$8.67 billion, using a discount rate of 3 percent, over a 30 year period.

Senator MURKOWSKI. I think it would be, particularly at a time when we're all focused on what's going on with cost, but not only the cost within the Department of Energy but the cost to outside parties. If we could have some kind of an assessment of that I think it would be helpful.

Let me ask you: as it relates to the BULB Act, there is a great deal of discussion about what the 2007 Act really meant or required. People are wondering whether or not the standards contained in EISA 2007 really are a ban on their ability to purchase or to use the incandescent light bulbs within their own home.

Ms. HOGAN. Yes. EISA 2007 sets performance levels for bulbs that requires these bulbs to be 30 percent more efficient than some of the bulbs we're using today. I think it's very important to say that what that means when you set a performance level is that any technology can come forward, any type of bulb, and meet those levels.

So as we look at what is on the marketplace today we see that there are variety of bulbs that do indeed meet these levels. There's new, improved incandescents. There are the CFLs. Then something that's very exciting at the Department of Energy is the growing number of LEDs with rapidly reducing prices for those bulbs as well.

So I think we do see that some people believe that this bill is a ban on the traditional incandescent. It's not a ban. What it is doing is setting performance levels to help consumers save 30 percent or more on their home lighting, offering substantial savings on the order of \$50 or so a household, and really offering them better bulbs that can save them money.

Senator MURKOWSKI. Of course as you know the concern out there is that you're going to have Department of Energy come knocking on your door and say I want to inspect your lights because I want to see if you're in compliance with EISA 2007. I'd like to think that we would never get to that point. But I think it is important to understand what it is that EISA 2007 requires or doesn't require.

One more question then on the overlapping rulemaking situation that we're in right now. If somehow this bill is signed into law before the rulemaking is finished what happens with the overlapping rulemaking? Where are we?

Ms. HOGAN. Clearly if a bill is signed into law that becomes the law of the Nation.

Senator MURKOWSKI. So do we just abandon what you have been putting in place with the rulemaking?

Ms. HOGAN. I think what we have as we've all worked together on these rulemakings is we all benefit from the work that has been done throughout that process. There's a multiyear process in the development of these rulemakings in which we've developed some of the information that will continue to be used on our part.

We certainly have been engaging with stakeholders around this. Some of this information has been used as part of an informational foundation in the consensus rulemaking process. So I guess I don't want to use the word abandon because I think what you see is all of the parties working together to get the best information on the table. What you see is some of that put forth in the consensus recommendation that you have before you and clearly if the bill gets signed into law that will become the law of the Nation going forward.

Senator MURKOWSKI. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Manchin.

Senator MANCHIN. Thank you, Mr. Chairman.

Thank you very much for your presentation. I noticed in times of recession that we're in right now and in my State of West Virginia and people are struggling like they are all over the country. The difference of the cost, the upfront costs, let's say 50 cents versus a \$1.50.

Is there anything that you are doing to make sure that the people really understand what the savings are? Putting an effort forward on that? Any type of programs that might help them be able to transition and get the long term savings?

Because sometimes what you have in your pocket and saying that down the road, the life of that bulb, you're going to really save money. That's not the reality. They need it on the front end or some help or assistance before we just mandate everybody. It's either that or no lights at all. I'm anxious to hear what you have to say about that if you all.

Ms. HOGAN. Certainly there are programs around the country that are helping advance efficient lighting. Utilities in many States and other programs have been offering different types of programs to get efficient lighting in the hands of consumers. But I do think it's important to think about the savings that these bulbs offer.

I think the numbers that you were just quoting really apply to the better incandescent that is now on the marketplace. It is a little bit over a dollar additional upfront cost. But the savings that that consumer will get also add up to more than a dollar even in the first year.

Senator MANCHIN. I think what I would be saying is there a transition period? Is there any help on the front end as people we're trying get them to understand that? But it's still money out of their pocket. Will there be any type of transition at first like for 6 months or 90 days or any of that? Do you know anything the government is planning on doing if the bill takes effect and people are mandated to buy the new bulbs?

Ms. HOGAN. We certainly don't have any authorization to go out and provide financial assistance to homeowners. But we do do a lot of work with the utilities and the other organizations that are providing various programs to help reduce the cost of the more efficient bulbs.

Senator MANCHIN. The other thing is that I know everything we're talking about is downstream improvements, more efficiently whether it be appliances or bulbs and this thing and these types of things. Have we talked about or have you all put as much effort toward the upstream? Give you an example on the power plants. Coal fired power plants 34 percent efficiencies.

What are you doing on that end because that's where the real big money is? The savings would be for our energy and the cost to all of our citizens who depend on these types of energy supplies. But basically we have outdated or outmoded, if you will, technology that's not supplying the most efficient.

Ms. HOGAN. I think when you look at the energy efficiency space and all that energy efficiency offers this country in terms of what is cost effective, there's tremendous opportunity in our homes, in our businesses and in our factories. Then you're right there are also opportunities in transmission and distribution and in our power plants.

The Department of Energy really is working comprehensively across all of those areas of opportunity to first demonstrate currently available technologies but then also to advance cutting-edge technologies, so we have even better solutions tomorrow.

Senator MANCHIN. I don't see the effort being put forth on the real high end which would be the utilities, if you will and in my State the coal fired plants that need to be retrofitted. They need to be updated and upgraded. The efficiencies that we have there

and loss of energy that we have that could be tremendously important for the security of our Nation.

I know that working on the downstream end of it and light bulbs and refrigerators are great. But if the plant that's providing the electricity is running at only 34 percent efficient, that doesn't make sense. It seems like you put more of your energy toward that.

Ms. HOGAN. I think we have a comprehensive program. Then in addition to that I think another area where we are highly focused is with combined heat and power where you can raise the conversion efficiencies because of doing the power and the heat together up to 60–70 percent. So we are trying to find all of those opportunities.

Senator MANCHIN. If you all could I would just finish on this. If I can meet with someone in the Department of Energy to see basically what you are doing on that end of it which is the downstream end. I mean, the upstream end, not just the downstream end. So if someone could help me on the upstream what they are putting forth and what efforts are being put forth. OK?

Ms. HOGAN. Terrific.

Senator MANCHIN. Thank you.

The CHAIRMAN. Let me see here.

Senator Burr.

Senator BURR. Dr. Hogan, welcome. Thank you for your testimony.

Let me ask you is there an energy standard that California doesn't separate themselves from the rest of the country today?

[Laughter.]

Senator BURR. I believe I know the answer. But should we just accept everything California does? Is that the Department of Energy's position?

Ms. HOGAN. That is not the Department of Energy's position that we should just—

Senator BURR. But that brings relevance to this committee I think. I mean, let me ask you. Is there a cost benefit analysis that's required in rulemaking?

Ms. HOGAN. There absolutely is a cost benefit analysis that is required in every appliance standards rulemaking.

Senator BURR. Tell me what the environmental cost is of improper disposal of mercury bulbs. I'm sure that's something that went into the equation.

Ms. HOGAN. First of all this standard that we are talking about here is a standard that was put forth by a bipartisan bill.

Senator BURR. I realize that. But what is the cost of improper disposal of mercury bulbs?

Ms. HOGAN. First what we are doing is educating people on the proper disposal of mercury bulbs. I think it's also important to look at the fact that this appliance standard, this light bulb standard, doesn't mandate CFLs and the use of the bulbs that have that tiny amount of mercury in them.

Senator BURR. I realize that. But—and I realize the statement that you made that bulbs that are traditional bulbs are not going to go away. Now manufacturers are going to make decisions based upon where consumers are herded to go.

Eventually that will mean less of a product if in fact there's a tax credit that affects it or there's policies that suggest that it's more advantageous to produce or consumers like me find that there's an energy savings. I've converted every bulb in my house. As a Member of Congress I have absolutely no idea how to dispose of the mercury bulb.

I wouldn't know where to take it. I'm going to throw it in the trash. Environmentally that's not good, is it?

Ms. HOGAN. Let's also talk about mercury more generally. Because I think we're focusing in on CFLs in particular. I think as we look across the environment that what we currently see is that more mercury is put into our environment by the electricity that we generate than the mercury that is in the CFL bulbs.

Where we are is we do not live in a perfect world. We are trying to figure out how to help save energy through these better bulbs. As we provide the information to consumers that they need about proper disposal I think we will be able to be successful on that front for the consumers that are interested in using the CFL bulb.

I think the other thing that's great to see across the country right now is many of the national retailers stepping up and doing education on their own, and being disposal locations for these mercury bulbs. So many of the major retailers are saying bring them back here. Just put them in the box as you come back to buy your next bulb.

Senator BURR. You talked about in your answers I think to Senator Murkowski about the timeline for rulemaking. It was lengthy because of consultation with interested parties. It came to my attention that over the last year new efficiency standards and certification requirements for commercial food equipment and specifically commercial refrigeration and freezers in which commercial food equipment manufacturers—the manufacturing community had not been fully involved or consulted in the rulemaking process, the standards and the regulatory process to the degree that residential product manufacturers had been.

Am I accurate?

Ms. HOGAN. I'm not aware of that issue. I'm happy to go back and look at that. We have—

Senator BURR. Do you separate commercial from consumer manufacturers—

Ms. HOGAN. No we have a standard process and set of procedures that we go through.

Senator BURR. A rule upgrading standards was published last month with 120 days given for the industry transition. You know, it sort of gets at what Governor Manchin was talking about. There's got to be some consideration, not just consultation and I ask you to look at that very closely, some consideration as to how quickly an industry can make a transition.

We can set a standard that on paper looks great and in reality we could get there but the cost to consumers in this country could be outrageous. I, for one, believe that it's the responsibility of those of us who serve here to consider the consumer impact of all the rulemaking that you make. To hold your feet to the fire to make sure that a full cost benefit analysis has been done and that from

a long term policy this committee set the national standard and not California.

Thank you.

Ms. HOGAN. Thank you. Certainly we will go back and look at that because we do try to take all of that into account in our rule-making processes. We're very aware of the cost to manufacturers and their need to transition and retool their facilities.

The CHAIRMAN. I would just mention that we are, this committee, is setting a standard in one sense of that phrase by having all these LED lights. We're the first committee in the Congress to have totally redone our committee room to use LED lighting. This is all American made LED lighting which should be good news to you, Senator—

Senator BURR. Probably made in North Carolina.

The CHAIRMAN. Very possibly. Very possibly.

[Laughter.]

The CHAIRMAN. Senator Coons.

Senator COONS. Thank you, Mr. Chairman for the illuminating comments. Thank you, Ms. Hogan for the opportunity to be with you today. I well remember service on the Energy Efficiency work group of our Governor's Energy task force and how eye opening it was to me to first realize just what enormous benefits energy efficiency can achieve for industry and for all of us.

I'll start simply by commenting that I'm hopeful we will move quickly through consideration of INCAA. The idea that over \$40 billion in savings to consumers can be realized over the next 20 years with a consensus standard that was negotiated by industry, manufacturers, advocates, consumer representatives, is very encouraging to me. I do take seriously the concerns raised by Senator Burr and others and these conversations need to be as broad reaching and collaborative as possible. But I do think it's a great thing. For us to be doing something constructive in a bipartisan way in this Congress is encouraging to me as well.

But let me if I might move to the BULB Act and some of the BULB related questions. Am I correct in understanding that all 3 of the major current incandescent manufacturers, GE, Phillips and Sylvania are already manufacturing high efficiency incandescent bulbs, the halogen bulbs? They're already available in the marketplace. The implementation of the standards that were passed in 2007 will not mandate CFLs will not end availability of incandescent bulbs in any way.

Ms. HOGAN. That is my understanding.

Senator COONS. If you could talk about some of the positives. My impression is that quite a few of these companies have made new investments in the United States. They have invested in new manufacturing facilities. There's been innovation in terms of new developments of exactly the types I'm pointing to in part in response to these higher efficiency standards for bulbs.

Ms. HOGAN. Yes. I think standards really do a number of things for this country in the area of the products that we use every day. They do help people save money. They give manufacturers certainty in terms of what they should be shooting for. They create these national markets as we discussed which gives them, again,

greater clarity on what the market looks like. It does help drive innovation.

I think there's a wonderful example in refrigerators in this country. They now use 75 percent less energy than they did as of 30 years ago. They are bigger and offer many more services for the American consumer.

It's just a terrific story. I think when you line up that innovation with standards programs you do see that standards help to drive a lot of that innovation. When you look at lighting and the types of bulbs that are now on the market, the better bulbs, the halogen incandescents, the CFLs and then truly the upcoming LEDs, you see that again, there's sort of a wealth of innovation happening on the light bulb front.

We also are seeing new jobs and new plants being stood up or expanded here in the United States behind these bulbs. There's a new manufacturing facility in Ohio for CFLs and newer expanded facilities in North Carolina and Florida for LEDs. So we think this is just a good story for this country.

Senator COONS. There's also some close to me in Pennsylvania as well as in Ohio. So I mean if I hear you right the impact of the existing standards is—it is propelling investment, innovation, new manufacturing capacity, reduces cost for consumers. But there are some education challenges.

As Senator Burr illustrated some consumers who have already moved to CFLs need to better understand how to dispose of them, myself included. There are some legitimate concerns about mercury from CFLs. The light quality hasn't met expectations.

But the LEDs in this very room and the incandescent bulb that I suspect may be demonstrated by the next panel exceed the current lighting standards and light quality of CFLs. So my hope is that we will reject the BULB Act and continue to move forward in an environment where these higher efficiency standards are actually leading to consumer savings, investment and new jobs.

Thank you for your testimony today, Ms. Hogan.

The CHAIRMAN. Senator Paul.

Senator PAUL. Thank you, Mr. Chairman. Thank you, Ms. Hogan for coming over today and for your testimony.

I was wondering if you're pro choice?

Ms. HOGAN. I'm pro choice on bulbs.

Senator PAUL. Actually that's the point. The point is is that most members of your Administration probably would be frank and characterize themselves and upfront characterize themselves as being pro choice for abortion. But you're really anti choice on every other consumer item that you've listed here including light bulbs, refrigerators, toilets. You name it.

You can't go around your house without being told what to buy. You restrict my purchases. You don't care about my choices. You don't care about the consumer frankly.

You raised the cost of all the items with all your rules, all your notions that you know what's best for me. Frankly, my toilets don't work in my house. I blame you and people like you who want to tell me what I can install in my house, what I can do.

You restrict my choices. There is hypocrisy that goes on on people who claim to believe in some choices but don't want to let the

consumer decide what they can buy and install in their house. I find it insulting.

I find it insulting that a lot of these products that you're going to make us buy. You won't let us buy what we want to buy. You take away our choices. These things you want us to buy are often made in foreign countries. You ship jobs overseas. The same thing that your Administration claims to be in favor of, you're shipping our jobs overseas, Miss. We can't make these items here.

I find it really an affront to the sensibility of the idea and notion of the free marketplace, of capitalism, of freedom of choice. Now it's not that I'm against conservation. I'm all for energy conservation.

But I wish you would come here to extol me, to cajole, to encourage, to try to convince me that it would be a good idea to conserve energy. But you come instead with fines, threats of jail. You put people out of business who want to make products that you don't like.

This is what your energy efficiency standards are. Put it—really call it what it is. Call it what it is. You prevent people from making things that consumers want.

I find it really appalling and hypocritical. I think there should be some self examination from the Administration on the idea that you favor a women's right to an abortion. But you don't favor a woman or a man's right to choice what kind of light bulb, what kind of dishwasher, what kind of washing machine.

I really find it troubling this busy body nature that you want to come into my house, my bathroom, my bedroom, my kitchen, my laundry room. I just really find it insulting. I find that all of the arguments for energy efficiency, you're exactly right. We should conserve energy. But why not do it in a voluntary way. Why not do it where you threaten to fine me or put me in jail if I don't accept your opinion.

In America we believe in trying to convince our neighbors, but not trying to convince them to the force of law. I find this antithetical to the American way. I'd appreciate your response.

Ms. HOGAN. OK. So I have, I guess, a couple of responses to that.

One, I think the appliance standards program is an example of really a great partnership between the Congress and the Administration over many, many, many years. So much of what we are implementing really had its genesis in bipartisan bills that have been put forth at a number of different points over the history of this country for the last 30 to 40 years.

Senator PAUL. But you restrict our choices, correct?

Ms. HOGAN. I really do not believe that the appliance standards end up restricting personal choice. I think the appliance—

Senator PAUL. I can't buy the old light bulbs. That restricts my choice on buying.

Ms. HOGAN. My view is what you want is lighting, right? What—

Senator PAUL. I can't buy a toilet that works.

Ms. HOGAN. I can help you find a toilet that works.

[Laughter.]

Senator PAUL. Are you going to pay for it? Everything costs more to go back and retrofit the toilets that don't work that no bureaucrat understood or flushed before they made us use them costs

money. It will cost thousands of dollars to go back and add some kind of jet stream to the toilets in my—we don't even save money. We flush them ten times. They don't work.

But the thing is you busy bodies always want to do something to tell us how we can live our lives better. Keep it to yourselves. Try to convince us through persuasion, but don't threaten to put us in jail or put us out of business if we don't accept your way of thinking.

The CHAIRMAN. Were you asking for another response or should I go ahead with my question?

[Laughter.]

Senator PAUL. I was kind of just enjoying. I've been waiting for 20 years to talk about how bad these toilets are and this is a good excuse today. Thanks.

The CHAIRMAN. I'm sorry about your toilet.

[Laughter.]

The CHAIRMAN. Let me just clarify for myself.

One issue here is the 10th amendment. Under the 10th amendment States have the ability to set standards such as the standards we're talking about. Some of them are doing it. Have done it in the past.

The question is is the Federal Government going to step in and set national standards or are we going to have a patchwork of standards which manufacturers have to deal with? Try to sell a different light bulb into California then they sell into Nevada then they sell into Virginia? Am I right that that's one of the impetuses for what—and I would also clarify that this is not something that you, the Administration is forcing on us.

This is something we, the Congress, over the last several decades and previous Administrations have endorsed and have enacted into law. The Department of Energy is implementing the law. That's my understanding of the situation.

Do you have any comment on either of those points?

Ms. HOGAN. No. Those are 2 very good points. Let's go back to why do we have appliance standards in this country?

It is exactly as Senator Bingaman outlines. You know, the first set of standards and the first standards law that were implemented in this country were the result of people, stakeholders, the manufacturers and others coming together saying that they see greater value in national markets as opposed to having a patchwork approach State by State by State. Then that's what created the framework for the appliance standards, the processes were outlined about doing cost benefit analyses so that you would establish these minimums that would deliver significant savings to American consumers and businesses. It was agreed to be a good public policy to be able to raise the minimum standards for some of these products where you could deliver substantial savings to the American public both in their homes and in their businesses.

I hate to bring the subject up again, but the toilets, in particular, were put forth in legislation in 1992. Again, I believe that was promoted by the plumbers and others or the manufacturers of the plumbing equipment. They're the ones that brought that forward. That's what we've been implementing to date.

I think what you do see, again, with the putting forth of these standards is you do see technological innovation. Many of the products that are out there on the market today really do deliver on the features and the performance that people are looking for in their homes. Your point about can we do this voluntarily?

We are doing this voluntarily as well. There are a number of voluntary programs to help people find the extra efficient products that are out there or the extra water saving products that are out there and roll in performance requirements to those as well so consumers can really find high performing products that save them money.

The CHAIRMAN. I jumped ahead and asked questions before all others had had a chance to. Senator Lee was here before and then Senator Shaheen has come in. But let me call on Senator Lee for his questions and then Senator Shaheen.

Senator LEE. I'm going to pass.

The CHAIRMAN. Senator Shaheen.

Senator SHAHEEN. Thank you, Mr. Chairman. I'm sorry that my colleague, Senator Paul is leaving because I actually—

Unknown speaker 1: Come on back, Rand. Come on back.

[Laughter.]

Senator SHAHEEN. Come on in. I certainly appreciate your frustration, Senator Paul. I share it in some ways.

But I think it behooves us all not to engage in name calling of those officials who are trying to carry out the work, that as the chairman has so well pointed out, Congress has asked them to do. Now as Congress we're going to change those policies. You know, we have the ability to do that.

But I think we have officials who are trying to do the best job they can. It's not helpful for any of us to engage in name calling. I would just point out that our dependence, at least in the Northeast on foreign oil and fossil fuels for our electricity has severely limited our choices. I'm happy to have the option to have some other choices that reduce our electricity use in a way that gives me the ability to make other decisions.

I mean, the fact is our light bulbs, our current, old incandescent light bulbs are the most inefficient, one of the most inefficient appliances we have in our homes. They waste about 80 percent of our energy. So I think it's helpful to have an alternative that's better.

Ms. Hogan, I would like to go back to energy efficiency, if I can because I know that the President has talked about a clean energy standard. That energy standard has not included energy efficiency as part of that energy standard. Given that energy efficiency is part of your bailiwick. It's the cheapest, fastest way to use energy.

Can you speak to why energy efficiency wasn't included or hasn't been talked about as part of clean energy standard and where the appropriate role of energy efficiency ought to be in that kind of a standard?

Ms. HOGAN. Yes. I can certainly get back to you on that topic.

[The information referred to follows:]

The Administration believes that the clean energy standard should be paired with robust energy efficiency measures and has stated so explicitly in its proposed principles. The question is not really whether to consider efficiency, but how to best design a policy that achieves this goal. To date, discussions have focused on two discrete areas where relatively simple policy additions could have considerable impact,

namely complementary appliance standards and crediting for end use generation that includes an energy efficiency component, like combined heat and power. This is still very much an active discussion, and we would welcome the opportunity to discuss options with members of this Committee and other interested Congressional offices.

Ms. HOGAN. Certainly the Administration is supportive of renewable energy in the clean energy standard and is supportive of energy efficiency. I think it's a question as to does the efficiency belong in the clean energy standard or does it belong as a set of complimentary measures that we believe will deliver the savings that are there to be achieved?

Senator SHAHEEN. So if we were going to go forward and try and include energy efficiency as part of a clean energy standard how would you suggest we do that? Do we need to persuade the President, the Administration, you and the Department of Energy that that's something we should do?

Ms. HOGAN. Clearly we are having discussions about the pros and cons of these different approaches and the pros and cons of setting targets at different levels associated with the clean energy standard.

Senator SHAHEEN. Can you talk about whether you see a role for combined heat and power and waste heat recovery systems in a clean energy standard?

Ms. HOGAN. We are very supportive of combined heat and power and waste heat recovery. As you know some of these issues come down to how you can measure and credit the energy savings from increased efficiency. We want to have a robust clean energy standard. We want to be able to include those types of things as we work on those technical issues.

Senator SHAHEEN. In addition to appliance standards what are other areas where we should be focusing on in terms of energy efficiency gains to achieve the greatest savings?

Ms. HOGAN. We have a pretty robust slate right now of appliance standards that we are working on to actually implement the standards we've been asked to implement by Congress. So we are working aggressively to meet a set of deadlines this June as well as deadlines that we have this coming December and through the calendar year 2012 and 2013.

Senator SHAHEEN. Maybe I wasn't clear in the way I asked my question. Are there particular areas as you're looking at energy efficiency whether it's transportation or utilities where you think there are the most savings to be gained. Obviously appliance standards is one of those.

Ms. HOGAN. Oh.

Senator SHAHEEN. But where are some of the other areas?

Ms. HOGAN. Oh, I'm sorry. I thought you were talking specifically about the appliance standards program.

No, as we look at the energy efficiency space, clearly the appliance standards program offers significant savings for this country. The other places where there are very good opportunities to make additional progress include new construction, building codes. So we are doing a lot of work on building codes. This includes the retrofit of our existing homes and the retrofit of our commercial buildings. We are rolling out and working on aggressive programs in each of those areas.

I think you may be familiar with our Better Buildings program on the residential side where we're working to demonstrate new deployment models that we think can retrofit homes in a deep way offering 20 percent savings or more per household. We're also demonstrating business models that will be replicable across the country and that we are investing in through some of our Recovery Act dollars. We're very excited about the progress being made there.

We also believe there is tremendous opportunity in the commercial building space. You probably saw in our 2012 budget that was sent to the Hill we would like to take many of the lessons learned from our Better Buildings residential program and be able to apply them to the commercial buildings area. There's a number of programs we outlined there that we think put the right seeds in place to achieve something like a 20 percent savings in commercial building energy in that sector.

I think it's important to remember that appliance standards can impact the products we go to the store to buy. But to get at the insulation, the building envelope, some of those things that you need to go through contractors and other networks to get at, we do need other approaches. That is what we're trying to get at with our Better Buildings Initiative.

Senator SHAHEEN. Thank you.

The CHAIRMAN. Senator Murkowski, did you have additional questions of Ms. Hogan?

Thank you very much for your testimony. We will allow you to leave and we'll call the second panel forward.

Our second panel is—let me go through the names as they're coming forward and taking their seats.

Mr. Steve Nadel, who is the Executive Director of the American Council for an Energy-Efficient Economy.

Mr. Joseph McGuire, President of the Association of Home Appliance Manufacturers.

Mr. Stephen Yurek, who is the President and Chief Executive Officer with the Air-Conditioning, Heating, and Refrigeration Institute.

Mr. Kyle Pitsor, who is Vice President of Government Relations with the National Electrical Manufacturers Association.

Dr. Mark Cooper, who is Director of Research with Consumer Federation of America.

Mr. Howard Brandston, who is a lighting consultant from Hollowville, New York.

Thank you all very much for being here.

If each of you could take about 5 minutes and make the main points that you would like us to try to understand. Then of course, we will include in the record your entire written statement, but if you could give us about a 5-minute summary of the main points that would be great. Then after you've all completed your testimony we will have some questions.

Mr. Nadel, go right ahead.

**STATEMENT OF STEVE NADEL, EXECUTIVE DIRECTOR,
AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY**

Mr. NADEL. Thank you, Senator Bingaman, Senator Murkowski. I appreciate the opportunity to testify here today.

Our organization has worked on appliance standards for a long time since the 1980s. The Federal standards program has a long history of bipartisan support. The first Federal standards were established in the National Appliance Energy Conservation Act of 1987 which was signed by President Reagan. Additional standards were assigned by President Reagan in 1988, President George H. W. Bush in 1992 and President George W. Bush in 2005 and 2007.

Minimum efficiency standards have been adopted in order to address market failures and barriers, replace a patchwork of State standards, save consumers money, reduce energy use and peak demand. We've talked before about the patchwork of State standards and how Federal standards can replace them and have uniform national standards. In addition, in my written testimony I include a lot of discussion about some of the market barriers that make it difficult for consumers often to purchase those efficient products.

In particular these standards such as in the case of the lamp standards have increased availability and increased consumer choice of efficient products. There are new products now available that wouldn't be available because of the standard. So they can increase consumer choice. They don't just take choices away.

My organization estimates that without these standards U.S. energy use last year in 2010 would have been about 3 percent higher than it was and U.S. electricity use would have been about 7 percent higher. These really made a significant impact on our energy use. The standards that have already been enacted will save consumers and businesses more than \$300 billion by 2030. That's just the existing standards.

We also did an analysis in January looking at the impacts of investments in efficient products and the reinvestment of the energy bill savings that people achieve. We estimate that last year in 2010 these standards created a net 340,000 jobs in the U.S. Clearly we need more jobs but they made a positive contribution.

Turning now to the 2 bills before us.

S. 398, the INCAA bill, we are strongly in support of this bill. This contains a variety of consensus proposals negotiated between product manufacturers, efficiency groups such as ours, environmental and consumers groups and States. They do have consensus. We were able to work on many creative ways to save a lot of energy but have wide consumer choice and minimal impacts on manufacturers.

As you noted all of these provisions were almost passed last Congress. This committee has reported them out. We hope that you can do so again.

We estimate that the S. 398, the INCAA bill will save the Nation nearly 150 trillion BTUs of energy by 2030 which is enough to serve the energy needs of 4.6 million average American households.

We estimate that this bill will result in net consumer and business savings of \$43 billion by 2030.

Will reduce peak electric demand by more than 20,000 megawatts which is equivalent to 68 typical 300 megawatt power plants.

Turning now to the BULB bill.

We urge that this bill be rejected as I think this bill has been improperly marketed or based on a misunderstanding that will ban incandescent lights. In fact there are several types of incandescent lights that will meet the standard.

For example, here I have a 70 watt bulb. It's an incandescent bulb. It will meet the standard.

Over there you see a poster. All 3 major manufacturers are now selling these bulbs in California. I mention California because their standard takes effect 1 year earlier so they're also there. My understanding is that the manufacturers are introducing them this spring in terms of nationwide.

I would also point out that the BULB bill doesn't just do away with the incandescent lamp standard but also would repeal standards on reflector lamps, metal halide lamps. It would get rid of a Federal program to improve efficiency in Federal facilities. It would also do away with labeling on televisions and other electronic products all of which were part of the same provision of EISA that this law wants to repeal.

In addition I would note that if we were to repeal those provisions based on our estimates of EISA. We'd be using an extra 72 billion kilowatt hours of electricity annually which is enough to serve 6.6 million American households. We'd need an extra 10,000 megawatts of power plants to meet that extra power.

I think as Assistant Secretary Hogan mentioned the savings from these standards that effectively BULB would repeal amount to about \$50 per American household or a total of about \$7 billion annually. These are annual savings. So very significant benefits would be lost for not much gain because there are a wide variety of products that would meet that.

With that I will conclude my testimony.

[The prepared statement of Mr. Nadel follows:]

PREPARED STATEMENT OF STEVE NADEL, EXECUTIVE DIRECTOR, AMERICAN COUNCIL
FOR AN ENERGY-EFFICIENT ECONOMY

SUMMARY

The federal standards program has a long history of bipartisan support. The original law establishing an appliance standards program was enacted under President Ford in response to the 1970's energy crisis. The first federal standards were established in the National Appliance Energy Conservation Act of 1987, signed by President Reagan. Additional standards were added in bills signed by Presidents Reagan, George H.W. Bush, and George W. Bush (two laws).

Minimum efficiency standards have been adopted in order to address market failures and barriers, replace a patchwork of state standards, save consumers money, and reduce energy use and peak electrical demand. Standards remove inefficient products from the market but still leave consumers with a full range of products and features to choose among. Standards commonly increase consumer choice by increasing availability of efficient, moderate-cost products.

My organization, the American Council for an Energy-Efficient Economy (ACEEE), estimates that without these standards and subsequent DOE rulemakings, U.S. 2010 electricity use and peak electric demand would have been about 7% higher and U.S. total energy use about 3% higher. Net savings to consumers from standards already adopted will exceed \$300 billion by 2030.¹ As a result of these savings, we estimate that in 2010 the appliance standards program

¹Max Neubauer, Andrew Delaski, Marianne Dimascio, and Steve Nadel. 2009. Ka-BOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards. Washington, DC: American Council for an Energy-Efficient Economy.

generated 340,000 net jobs in the U.S.² The majority of these standards have been set by Congress, based on consensus agreements between manufacturers and energy efficiency advocates.

S. 398, the Implementation of Consensus Appliance Standards Agreement Act (INCAAA), contains a variety of consensus proposals negotiated between product manufacturers, ACEEE, and other efficiency supporters, including consumer and environmental groups. These negotiations have resulted in some creative solutions that provide substantial benefits to consumers while keeping impacts on manufacturers to modest levels. The provisions in INCAAA update some existing standards and add standards for a few new products based on standards already enacted by several states. Most of these provisions were reported out by this Committee in the 111th Congress. We strongly support this bill.

We estimate that INCAAA will reduce save the nation nearly 850 trillion Btus of energy each year by 2030—enough energy to meet the needs of 4.6 million typical American households. INCAA will result in net economic savings (benefits minus costs) to consumers of more than \$43 billion annually by 2030 and will reduce peak electric demand in 2030 by about 20,500 MW, equivalent to the output of 68 typical 300 MW power plants. In addition, these standards will save nearly 5 trillion gallons of water, roughly the amount needed to meet the current needs of every customer in Los Angeles for 25 years.

S. 395, the Better Use of Light Bulbs Act (BULB), would repeal Subtitle III B of the Energy Independence and Security Act of 2007 (EISA). ACEEE urges that this bill be rejected.

Many proponents of BULB claim that under EISA, incandescent lamps are banned, and therefore consumers would be forced to purchase compact fluorescent lamps (CFLs). The BULB bill aims to end this reputed ban on incandescent lamps. These claims are based on a faulty understanding of the lighting market—in fact, the lamp performance standards in the 2007 law are already being met by four types of bulbs now on the market, including two types of incandescent bulbs.

Also, the BULB bill would repeal a variety of other sections in EISA, including provisions on reflector lamps (closing a loophole in the 1992 law that established reflector lamp standards), metal halide lamps (primarily used in factories, large commercial spaces, and outdoors), consumer information labels for televisions and other electronic products, and a program to improve lighting efficiency in federal facilities. We have not seen or heard any criticisms of these other provisions, but still the BULB bill would repeal them.

In 2007 when EISA was passed, ACEEE estimated that the provisions in Subtitle III B would by 2020 reduce annual electricity use by 72 billion kWh (enough to serve the annual electricity needs of 6.6 million average American households); reduce peak electric demand by more than 10,000 MW (equivalent to the output of more than 30 power plants (300 MW each); and reduce consumer energy bills by more than \$7 billion (about \$50 per American household annually).³ These benefits would be lost if the BULB bill is enacted.

According to a recent survey by USA Today of 1,016 adults on the lamp standards, despite all the recent publicity about an incandescent lamp “ban,” “61% of Americans call the 2007 legislation a ‘good’ law while 31% say it’s ‘bad’.”⁴

The federal appliance and equipment efficiency standards program is a great energy efficiency success story, with Congress adopting new standards in each of the last three decades on a bipartisan basis. This Committee can add to this success by supporting S. 398 (INCAAA) and opposing S. 395 (BULB).

INTRODUCTION

My name is Steven Nadel and I am the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE), a nonprofit organization dedicated to increasing energy efficiency to promote both economic prosperity and environmental protection. We were formed in 1980 by energy researchers and celebrated our 30th anniversary last year. Personally, I have worked actively on appliance and equipment standards issues for more than 20 years at the federal and state levels and

²Gold, R., S. Nadel and S. Laitner. 2011. *Appliance and Equipment Efficiency Standards: A Money Maker and Job Creator*. Washington, DC: American Council for an Energy-Efficient Economy.

³ACEEE. 2007. “Energy Bill Savings Estimates as Passed by the Senate.” <http://www.aceee.org/files/pdf/fact-sheet/EnergyBillSavings12-14.pdf>. Washington, DC: American Council for an Energy-Efficient Economy.

⁴Koch, Wendy. Feb. 17, 2011. “Poll: Americans OK with Newer Light Bulbs.” USA Today. <http://content.usatoday.com/communities/greenhouse/post/2011/02/poll-americans-ok-newer-light-bulbs/1>

participated in discussions that led to the enactment of federal standards legislation in 1987 (NAECA), 1988 (NAECA amendments), 1992 (EPAAct), 2005 (EPAAct), and 2007 (EISA). I also worked on the appliance standards provisions incorporated into the ACELA bill that this Committee reported out last Congress.

The federal standards program has a long history of bipartisan support. The original law establishing an appliance standards program was enacted under President Ford in response to the 1970's energy crisis. The first federal standards were established in the National Appliance Energy Conservation Act of 1987, signed by President Reagan. Additional standards were added in bills signed by Presidents Reagan, George H.W. Bush, and George W. Bush (two laws). For example, the National Energy Policy developed by President Bush and Vice President Cheney in 2001 notes that these "standards will stimulate energy savings that benefit the consumer, and reduce fossil fuel consumption, thus reducing air emissions."

Minimum efficiency standards have been adopted in order to address market failures and barriers, replace a patchwork of state standards, save consumers money, and reduce energy use and peak electrical demand.

Among the market failures and barriers addressed by standards are:

- Rush purchases when an existing appliance breaks down, providing no time to comparison shop;
- Limited stocking and availability of efficient products for some product types;
- Purchases by builders and landlords who do not pay appliance operating costs and hence have no financial incentive to value efficiency; and
- Frequent bundling of efficient features with other "bells and whistles," which raise the price of efficient products and dissuade many purchasers.

Standards remove inefficient products from the market but still leave consumers with a full range of products and features to choose among. Commonly, standards can even increase consumer choice by making efficient, moderate-cost products available. For example, later in my testimony I will discuss how the general service lamp standard has resulted in the establishment of two new classes of improved-efficiency incandescent light bulbs.

The foundation of prior appliance and equipment standards laws was the adoption of consensus standards negotiated between product manufacturers and energy efficiency supporters. ACEEE has been involved in all of these negotiations. Most federal standards build on previous state standards. After several states adopt standards for a product, manufacturers generally prefer uniform national standards to a patchwork of state standards, particularly if the state standards are not identical to each other. When a federal standard is established, it preempts state standards. Typically, manufacturers, represented by their trade association, and efficiency supporters, generally represented by ACEEE, have gotten together to work out specific standards proposals. These negotiations allow creative solutions to problems, resulting in win-win agreements. Once agreement is reached, the parties go to members of Congress seeking legislation putting each agreement into law. All of the specific standards adopted by Congress have had the support of manufacturers and energy efficiency organizations. Consumer organizations and states have also supported federal standards. In a few instances where manufacturers and efficiency advocates cannot agree, Congress has delegated decisions to DOE, allowing each side to make its best case and then having the Secretary of Energy decide what, if any, standard to set based on the criteria of "maximum improvement in energy efficiency. . . which. . . is technologically feasible and economically justified." Appliance and equipment efficiency standards have been one of the United State's most effective energy efficiency policies. ACEEE has estimated that without these standards and subsequent DOE rulemakings, U.S. 2010 electricity use and peak electric demand would have been about 7% higher and U.S. total energy use about 3% higher. Net savings to consumers from standards already adopted will exceed \$300 billion by 2030.⁵

In January 2011, ACEEE published a paper estimating the impact of appliance efficiency standards enacted to date.⁶ We found that:

- Standards already in place make a big contribution to U.S. efforts to reduce energy use, with savings growing to 5.8 quads a year in 2020, or more than

⁵ Max Neubauer, Andrew Delaski, Marianne Dimascio, and Steve Nadel. 2009. Ka-BOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards. Washington, DC: American Council for an Energy-Efficient Economy.

⁶ Gold, R., S. Nadel and S. Laitner. 2011. Appliance and Equipment Efficiency Standards: A Money Maker and Job Creator. Washington, DC: American Council for an Energy-Efficient Economy.

enough to meet the total annual energy needs of one-quarter of all U.S. households.

- These standards and the resulting energy bill savings generated about 340,000 jobs in 2010, or 0.2% of the nation's jobs. The energy and related utility bill savings from standards will continue to contribute to a healthy economy over time, and in 2030, the number of jobs generated will increase to about 380,000 jobs—an amount about equal to the number of jobs in Delaware today.

In the balance of my testimony I will address the two bills that are the subject of today's hearing.

S. 398—IMPLEMENTATION OF CONSENSUS APPLIANCE AGREEMENTS ACT (INCAA)

INCAA contains a variety of consensus standard agreements that have been negotiated among product manufacturers, efficiency supporters, and other interested parties over the past two years. ACEEE strongly supports this bill. We thank Senators Bingaman and Murkowski for introducing this bill and also thank Senator Lugar who played a key role in advancing last year's version of this bill.

INCAA includes provisions to:

- Update existing standards for residential furnaces, central air conditioners, and heat pumps.
- Update existing standards for residential refrigerators, freezers, clothes washers, clothes dryers, dishwashers, and room air conditioners.
- Establish new standards, based on existing state standards, for bottle-type water dispensers, portable electric spas, and commercial hot food holding cabinets.
- Establish new standards based on ASHRAE/ANSI consensus standards for commercial furnaces and heat pump pool heaters.
- Establish standards for the most inefficient types of outdoor lighting.
- Study video game console energy use.
- Make technical corrections to standards established in EAct 2005 and EISA 2007.

Overall, ACEEE estimates that this bill will:

- Save the nation nearly 850 trillion Btus of energy each year by 2030—enough energy to meet the needs of 4.6 million typical American households;
- Result in net economic savings (benefits minus costs) to consumers of more than \$43 billion annually by 2030;
- Reduce peak electric demand in 2030 by about 20,500 MW, equivalent to the output of 68 typical 300 MW power plants; and
- Save nearly 5 trillion gallons of water, roughly the amount needed to meet the current needs of every customer in Los Angeles for 25 years.

Savings from Consensus Efficiency Standards in H.R. 5470				
Annual Energy Savings	2020		2030	
	TWh	TBtu	TWh	TBtu
Central Air Conditioners	4.6	47.9	12.9	130.1
Furnaces (Commercial)	-	1.0	-	2.3
Heat Pumps (heating)	3.0	31.7	8.6	86.1
Drinking Water Dispensers	0.3	2.6	0.3	2.7
Hot food holding cabinets	0.1	0.2	0.2	1.6
Portable electric spas	0.1	1.4	0.2	1.9
Building Codes for AC & furnaces	2.4	31.0	6.6	81.0
Refrigerators and Freezers	10.7	113.9	27.2	282.1
Clothes Washers	3.0	46.0	9.1	137.9
Clothes Dryers	1.7	19.2	4.8	50.9
Room AC	2.9	30.7	4.7	48.5
Dishwashers	1.2	14.9	1.9	23.4
Total	30.0	340.4	76.3	849.3

In the next portion of my testimony I will briefly summarize the rationale behind the key provisions in INCAA.

Definitions (Sec. 2): This section clarifies the definition of standards so that more than one efficiency metric may be used for a product if needed and justified. The past two administrations have disagreed on whether DOE may set more than one standard for a product. There have been numerous times in the past where consensus agreements have been reached with more than one metric but DOE did not

adopt them because it argued that the current definition permits only one metric. It would be useful to let DOE establish these standards, either based on its own analysis or on consensus agreements, without always having to go to Congress. This is not a requirement to set more than one efficiency metric but just permission to do so. Under existing law, each efficiency requirement will need to be economically feasible and economically justified.

This section also contains new efficiency standards for residential furnaces, central air conditioners, and heat pumps, and makes it easier for states to include a specific set of efficiency levels that are higher than the minimum standard in their state building codes. For these products, regional standards are established, generally dividing the country into North and South regions. In the North, the current air conditioner standard is left unchanged and a process is established for DOE to set a northern furnace standard. In the South, the current furnace standard is unchanged but the air conditioner is raised by one efficiency point from SEER 13 to SEER 14. The building code provision allows states to include specific higher efficiency levels in state building codes for new construction (e.g., SEER 15 in the South) provided they also provide a pathway for use of minimum efficiency equipment (e.g., this pathway might require SEER 14 and use of improved windows to make up for the lost energy savings). The building code provision requires Congressional action as DOE probably does not have the authority to establish these standards on their own.

Heat pump pool heaters (Sec. 3): There have been federal standards for gas-fired pool heaters for many years. These will be the first standards for efficient electric pool heaters. The specific standard levels come from ASHRAE Standard 90.1-2010.

GU-24 base lamps (Sec. 4): These are a new type of lamp base that was developed in response to an ENERGY STAR program solicitation. GU-24 lamps are compact fluorescent lamps that can all operate on the same type of base, regardless of lamp wattage. With a common base, it is easier for consumers to purchase replacement tubes, making these lamps attractive for utility rebate programs. This provision prevents sale of inefficient lamps that could be used in GU-24 sockets and defeat the energy-saving purpose of these sockets. Presently inefficient GU-24 lamps are not produced and this provision would prevent their introduction (some foreign companies who did not win the ENERGY STAR solicitation have threatened to introduce such lamps in order to stymie the GU-24 initiative).

Bottle-type water dispensers, portable electric spas, and commercial hot food holding cabinets (Sec. 5): These are products that are currently regulated in California, Connecticut, and Oregon (all three products) and Maryland, New Hampshire, Rhode Island, and the District of Columbia (for water dispensers and hot food holding cabinets). This provision would extend these state standards to apply nationally. Bottle-type water dispensers are used in many offices. Efficient products have insulation to help keep hot water hot and cold water cold. Portable electric spas, also called hot tubs, are used in some residences. Efficient products typically have insulated covers to keep heat in when the unit is not in use. Commercial and in-ground spas are not included. Hot food holding cabinets are typically used in hospitals to keep food warm while it is being transported to patient rooms. Efficient products are insulated. These standards were developed in association with the trade association for each product—the Association of Pool and Spa Professionals, the International Bottled Water Association, and the North American Food Equipment Manufacturers. Pictures of these products are as follows:*

Test procedures (Sec. 6): Provides for expedited consideration of consensus test procedure proposals, mimicking a provision in EISA on consensus standards proposals. Clarifies current law on petitions for amendments to test procedures and establishes deadlines for responding to petitions (currently, there are no deadlines).

Smart Appliances (Sec. 8): Directs EPA to consider establishing a credit in the ENERGY STAR program for appliances that are “smart.” This was a provision in our consensus agreement with appliance manufacturers. The parties have filed a petition with EPA. This provision sets a deadline for EPA to respond.

Video game consoles (Sec. 9): These are products such as the Sony PlayStation 3, Microsoft Xbox, and Nintendo Wii. If left on, these products can use more energy than a typical new refrigerator. This provision would have DOE study these products and decide whether minimum efficiency standards should be considered.

New appliance standards (Sec. 10, 11, 13, 14, and 15): Establishes specific new standards negotiated with manufacturers for residential refrigerators, freezers, room air conditioners, clothes dryers, clothes washers, and dishwashers. For the most part the new standards are based on efficiency levels now promoted by ENERGY STAR and by federal tax credits for efficient appliances established in 2005

* Graphics have been retained in committee files.

and updated in 2008. The AHAM witness at this hearing will describe these standards in more detail.

Uniform efficiency descriptor for covered water heaters (Sec. 12): Directs DOE to develop a new single efficiency descriptor for both residential and commercial water heaters. Currently there are separate residential and commercial descriptors, which creates difficulties for products that can be used in both sectors (e.g., large homes and small businesses). This provision would also correct differences in test procedures for storage-tank and tankless water heaters, allowing consumers to fairly compare these systems (under the current test procedure, the rating for tankless water heaters is misleadingly high). This provision was originally introduced by Senators Kohl and Corker in the 111th Congress.

Petition for amended standards (Sec. 16): Sets a deadline for DOE to act on standards petitions. Currently there is no deadline.

Prohibited acts (Sec. 17): Improves enforcement of standards by extending coverage from just manufacturers to also include distributors, retailers, and private labelers. State standards are generally enforced at the distributor and retailer level.

Outdoor lighting (Sec. 18): Establishes standards for the least-efficient types of outdoor lighting—mercury vapor and quartz lamps. Sale of mercury vapor ballasts were curtailed in EAct 2005 and this provision would complete the process to phase-out these inefficient lamps. The quartz lamp provision would require use of more efficient quartz products that have an infrared reflective coating.

Commercial furnaces (Sec. 19): Makes the standard established in ASHRAE standard 90.1-1999 a national standard. Most products already meet this standard but this provision would bring all products into compliance.

Service over counter commercial refrigerators (Sec. 20): Establishes a separate product class for these products, allowing a less stringent standard than the one set in EAct 2005. The 2005 standard has proven difficult to meet for these products and manufacturers and efficiency supporters have developed a more feasible standard.

Technical corrections (Sec. 24): Makes a variety of technical corrections to EAct 2005 and EISA, correcting drafting, typographical, and other errors. These include non-conforming amendments to underlying law and language that was not adequately clear. Many of these mistakes were made in the process of codifying the conference agreement. Congress needs to act to correct these errors because some of the affected standards are scheduled to take effect soon. We have worked together with the affected trade associations to reach consensus on these technical amendments.

In addition to the sections now in INCAAA, we hope that some additional sections can be added, as follows:

Reflector lamps: NEMA and ACEEE have been discussing language to clarify what DOE should consider when it next revises the incandescent reflector lamp standard originally established by Congress in 1992. For this next rulemaking, we have agreed that DOE should consider both incandescent and non-incandescent products, and possible alternative energy metrics to the lumens per Watt metric that is now in use. Specific language is contained in the appendix to my testimony. This language would require DOE to consider these issues, but based on this consideration, DOE could decide to not make changes. This language gives DOE more options, but decisions on these options will depend on DOE analysis made during the next DOE rulemaking.

Outdoor lighting: Last year's version of INCAAA contained standards for outdoor lighting fixtures that we negotiated with NEMA. That proposal rests on a fixture classification system developed by the Illuminating Engineering Society (IES). The IES standard is now being revised and once this is revised, some modifications to our original consensus agreement will likely be needed. Once this process is completed, we will provide updated legislative language.

Electric motors: We are also discussing with NEMA revisions to the current federal standard for electric motors. These revisions will likely include additional product classes to be covered by the standards established in EISA. Assuming these discussions are successful, we will provide specific suggested language.

S. 395—BETTER USE OF LIGHT BULBS ACT (BULB)

The BULB bill would repeal Subtitle III B of the Energy Independence and Security Act of 2007 (EISA). ACEEE urges that this bill be rejected.

Many proponents of BULB claim that under EISA, incandescent lamps are banned, and therefore consumers would be forced to purchase compact fluorescent lamps (CFLs). The BULB bill aims to end this reputed ban on incandescent lamps. These claims are based on a faulty understanding of the lighting market—in fact, efficient incandescent light bulbs that meet the EISA standards are already on sale well in advance of the national standards taking effect.

Also, the BULB bill would repeal a variety of other sections in EISA, including provisions on reflector lamps (closing a loophole in the 1992 law that established reflector lamp standards), metal halide lamps (primarily used in factories, large commercial spaces, and outdoors), consumer information labels for televisions and other electronic products, and a program to improve lighting efficiency in federal facilities. We have not seen or heard any criticisms of these other provisions, but still the BULB bill would repeal them.

In 2007 when EISA was passed, ACEEE estimated that the provisions in Subtitle III B would by 2020:⁷

- Reduce annual electricity use by 73 billion kWh (enough to serve the annual electricity needs of 6.6 million average American households);
- Reduce peak electric demand by more than 10,000 MW (equivalent to the output of more than 30 power plants (300 MW each); and
- Reduce consumer energy bills by more than \$6 billion (about \$50 per American household annually).

These benefits would be lost if the BULB bill is enacted.

According to a recent survey by USA Today, despite all the recent publicity about an incandescent lamp ban, a recent survey of 1,016 adults on the lamp standard found that “61% of Americans call the 2007 legislation a ‘good’ law while 31% say it’s ‘bad’.”⁸

I would also note that the U.S. is not alone in passing this type of legislation. Similar legislation has been passed in Canada, Australia, the European Union, Brazil, Argentina, Russia, and Malaysia. And China is now developing standards. The Australian, European, and South American standards have already taken effect.

In the following sections I address a few of the key issues in this debate.

Does EISA ban incandescent lamps and only permit use of compact fluorescent lamps?

EISA sets lamp performance standards in terms of lumens of light output per Watt of power input. The standards are higher for high-lumen bulbs since efficiency generally increases as bulb size increases. Any lamp technology that can meet the performance standard can be sold. Presently, there are four types of lamps on the market that meet the EISA standard, two of which are incandescent. The four complying lamp types are:

1. High-efficiency halogen bulbs.—All three major manufacturers (GE, Osram Sylvania, and Philips) have incandescent products that place the filament in a capsule containing halogen gas. The filament burns more efficiently than in a conventional incandescent lamp. These halogen products have been used for more than a decade in automobile headlamps and most commercial reflector lamps. With halogen lamps, a 72 W halogen replaces a conventional 100 W lamp and a 43 W halogen replaces a conventional 60 W lamp. Their rated life is the same as conventional lamps—1,000 hours. These lamps have a suggested list price of \$1.49, although as production increases the price is likely to drop.

2. Halogen IR lamps.—These are similar to the lamps above but with a special coating on the capsule that reduces the amount of infrared energy leaving the capsule, increasing lamp efficiency still further. Presently, Philips markets halogen IR lamps. The higher efficiency permits manufacturers to design longer life lamps and still meet the performance standard. For example, the Philips lamp has a rated life of 3,000 hours, three times that of a conventional incandescent bulb. Presently these lamps sell for about \$4, but as production increases, costs will come down.

3. Compact fluorescent lamps (CFLs).—These lamps are now widely available and come in a variety of light colors and shapes such that lamps are available

⁷ACEEE. 2007. “Energy Bill Savings Estimates as Passed by the Senate.” <http://www.aceee.org/files/pdf/fact-sheet/EnergyBillSavings12-14.pdf>. Washington, DC: American Council for an Energy-Efficient Economy.

⁸Koch, Wendy. Feb. 17, 2011. “Poll: Americans OK with Newer Light Bulbs.” USA Today. <http://content.usatoday.com/communities/greenhouse/post/2011/02/poll-americans-ok-newer-light-bulbs/1>

to fit most existing fixtures. Prices have come down enormously. This past weekend I was at Home Depot and they had a variety of 4-packs for under \$3, an average of 75 cents per bulb.

4. LED lamps (light emitting diodes).—These lamps use multiple LEDs to provide light. Only recently have general service lamps made it to the market. They have long life (e.g., 25,000 hours or more). At Home Depot this past weekend these bulbs were selling for \$18-40. These are brand-new products and prices are likely to drop dramatically in coming years.

Do the EISA standards reduce consumer choice?

The standards have resulted in some important new choices while eliminating the least efficient option in the market. On the one hand, the conventional incandescent lamp developed by Thomas Edison more than a century ago will no longer be available. On the other hand, the standard has spurred innovation in the lighting industry, resulting in the development of both general service halogen and general service halogen IR lamps. Without the 2007 lamp standards, it is unlikely these products would have been brought to market. And the impending standard is also helping to spur development of general service LED lamps.

There has also been some recent publicity about how Easy Bake ovens for children use a 100 W light bulb as their heating element. Easy Bake has announced that they will soon be coming out with a new oven that does not need a light bulb.⁹ Instead it will have a small electric element that is a more efficient heater than a light bulb.

Why not leave the choice to consumers and let them purchase inefficient bulbs if they want to?

The bulbs someone purchases affects not only their own energy bills, but also all other consumers as well. Power demand is growing, meaning that new power plants are needed. New power plants cost more per kWh than existing power plants,¹⁰ so new power plants raise rates. The lamp efficiency standards reduce growth in electricity use and thereby moderate these rate increases for all consumers.

In addition, more efficient bulbs reduce emissions from power plants, affecting the air we all breathe. In the next section I discuss emissions of mercury, but more efficient bulbs also reduce emissions of criteria pollutants (sulfur and nitrogen oxides) and greenhouse gases, benefiting all Americans.

Is mercury a major problem with CFLs?

CFLs contain a small amount of mercury, typically about 4 mg per bulb. Manufacturers have significantly reduced the amount of mercury in bulbs relative to products from earlier years. By comparison, the old mercury thermometers we all grew up with used about 500 mg of mercury—125 times more. Most of this mercury becomes bound to the inside of the bulb as the bulb is used. The amount of mercury in the bulb needs to be balanced against the amount of mercury released into the air when power is generated. According to EPA: “More than half of [total mercury emissions in the U.S.] come from coal-fired electrical power. Mercury released into the air is the main way that mercury gets into water and bio-accumulates in fish. (Eating fish contaminated with mercury is the main way for humans to be exposed).” Again according to EPA, a typical incandescent lamp releases 5.5 mg into the environment, all from power generation. A typical CFL releases only 1.6 mg, including 1.2 mg from power generation and 0.4 mg from landfilling CFLs.¹¹

Aren't halogen lamps the type of lamp that was linked to household fires a few years ago?

Yes, there were fires associated with halogen torchiere luminaries. But these had exposed tubes and were generally high-wattage—e.g., 300 W per tube. The general service halogen lamps on the market today have the tube enclosed within an outer bulb and they are lower wattage—the highest are 72 W. The higher the Watts, the more heat that is given off. Also, the general service halogen lamps on the market today contain a safety fuse that will shut the lamp off should it fall over and break.

⁹ Karp, Gregory. Feb. 24, 2011. “Light Bulb Goes Off for Easy-Bake Oven’s New Idea.” Chicago Tribune. <http://articles.chicagotribune.com/2011-02-24/news/ct-talk-0224-easy-bake-oven-20110224-1—bulb-100-watt-incandescent-light-easy-bake-ovens>.

¹⁰ For information on the cost of new power plants see Lazard. 2009. “Levelized Cost of Energy Analysis, version 3.0.” <http://efile.mpsc.state.mi.us/efile/docs/15996/0145.pdf>. These costs are only for the generating station and thereby account for only about half of retail electricity prices since transmission, distribution and other costs are not included.

¹¹ EPA. Nov. 2010. “Frequently Asked Questions, Information on Compact Fluorescent Light Bulbs (CFLs) and Mercury.” http://www.energystar.gov/ia/partners/promotions/change_light/downloads/Fact_Sheet_Mercury.pdf

CONCLUSION

The federal appliance and equipment efficiency standards program is a great energy efficiency success story, reducing U.S. energy use by about 7% in 2010, reducing consumer and business energy bills by about \$34 billion in 2010, and generating more than 300,000 jobs. This program has a long history of bipartisan support.

The INCAAA bill will add to these benefits. By 2030, we estimate that INCAAA will save nearly 850 trillion Btus of energy annually in 2030 and result in net economic savings (benefits minus costs) to consumers of more than \$43 billion by 2030. This bill has consensus support from product manufacturers, energy efficiency and consumer organizations, and a variety of other affected parties. We urge this Committee to favorably report out INCAAA.

On the other hand, the BULB bill will result in higher energy use and costs—an average of about \$50 annually in higher energy bills per household. Contrary to some reports in the media, this bill will not ban incandescent lamps and require use of CFLs. The general service lighting standards enacted by Congress in 2007 have spurred product innovation and now in addition to CFLs, two types of incandescent lamps are now being sold that will meet the new standards. We urge this Committee to not support the BULB bill. This concludes my testimony. Thank you for the opportunity to present these views.

APPENDIX: RECOMMENDED NEW LANGUAGE ON REFLECTOR LAMPS

STANDARDS FOR CERTAIN REFLECTOR LAMPS.

Section 325(i) of the Energy Policy and Conservation Act (42 U.S.C. 6295(i)) is amended by adding at the end the following:

“(9) REFLECTOR LAMPS.—

(A) In conducting rulemakings for reflector lamps after January 1, 2014, the Secretary shall consider:

- “(i) incandescent and nonincandescent technologies; and
- “(ii) a new energy-related measure, other than lumens per watt, that is based on the photometric distribution of those lamps.

The CHAIRMAN. Thank you very much.
Mr. McGuire.

**STATEMENT OF JOSEPH M. MCGUIRE, PRESIDENT,
ASSOCIATION OF HOME APPLIANCE MANUFACTURERS**

Mr. MCGUIRE. Chairman Bingaman, Ranking Member Murkowski, thank you for providing me the opportunity to testify on behalf of the Association of Home Appliance Manufacturers regarding S. 398. Thank you both for your leadership in the area of appliance efficiency.

AHAM represents manufacturers of major, portable and floor care home appliances and suppliers to the industry. Our membership is global and produces more than 95 percent of the household appliances shipped for sale in the United States. AHAM members also employ tens of thousands of people in the U.S. The factory shipment value of these products is more than \$30 billion annually.

The home appliance industry through its products and innovation is essential to U.S. consumer lifestyle, health, safety and convenience. Through its technology employees and productivity our industry contributes significantly to U.S. jobs and economic security. Home appliances are also a success story in terms of energy efficiency and environmental protection.

New appliances often represent the most effective choice a consumer can make to reduce home energy use and costs. Products with an added ENERGY STAR designation are at least 10 to 20 percent more efficient than the Federal standards require.

On average a modern refrigerator today uses only the same amount of electricity as a 50 watt light bulb.

While clothes washer tub capacities have grown larger the new clothes washer uses 73 percent less energy than it did in 1990. In fact replacing an year old washer today with one of average efficiency will save the American consumer \$130 per year in utility bills and more than 5,000 gallons of water per year.

Dishwashers, room air conditioners, freezer and other major appliances offer similar energy efficiency gains.

We support Federal efficiency standards in lieu of State standards that have been involved with and supported appliance related energy legislation for 30 years. In short if there are to be regulations a single, uniformed standard throughout the United States and even throughout North American is preferable to a patchwork of 50 State standards. The current appliance standard system is also designed to take into consideration a number of factors including consumer cost and product functionality as well as provide adequate lead time and sell through time for manufacturers.

The agreement in S. 398 would implement for AHAM's products, it represents energy standards that for the most part are already being pursued by the DOE based on deadlines and previous legislation or court imposed consent decree. But enacting these standards into law will assist DOE in meeting its many statutory deadlines for standards development. It will also reduce the burden the industry and other stakeholders would face in participating in separate regulatory proceedings. The bill also provides added lead time and certainty to prepare for new standards which is welcome in these economically trying times.

S. 398 saves energy and increases our energy independence. The standards in the bill when combined with other elements of the agreement will save more than nine quads of energy over 30 years. The agreement requires incentivizes clothes washers and dishwashers to use nearly 5 trillion less gallons of water over 30 years. Over that same 30 year time period greenhouse gas emissions will be reduced by approximately 550 million metric tons.

In addition to the standards in the bill an important, but non legislative component of this agreement is that it will jump start the SMART grid by helping to deploy Smart appliances nationwide and enable consumers to better take advantage of demand response and real time pricing opportunities. This will be accomplished when ENERGY STAR agrees to petition from our coalition requesting recognition of the benefits of SMART appliances.

The third and final important pillar of this agreement are incentives to manufacturers to increase the production of super efficient appliances over and above the ENERGY STAR levels thereby saving even more energy and water and encouraging more job creation. These manufacturer tax credits require continued improvement in the production of super efficient appliances because the tax credits can only be claimed from increased production over previous years even during a recession. These incentives impact approximately 46,000 manufacturing jobs and could create new jobs.

We strongly encourage this committee to approve S. 398 to lock in the energy savings contained in the standards portion of our

agreement. We look forward to working with this committee on these and other issues.

Thank you.

[The prepared statement of Mr. McGuire follows:]

PREPARED STATEMENT OF JOSEPH M. MCGUIRE, PRESIDENT, ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

Chairman Bingaman, Ranking Member Murkowski and members of the Committee, thank you for providing me the opportunity to testify on behalf of the Association of Home Appliance Manufacturers (AHAM) regarding the Implementation of National Consensus Appliance Agreements Act of 2011 (S. 398) to amend the Energy Policy and Conservation Act to improve energy efficiency of appliances. We appreciate the Committee's willingness to consider and support consensus agreements for standards and incentives by industry, efficiency advocates, environmental and consumer groups and State energy offices.

AHAM represents manufacturers of major, portable and floor care home appliances, and suppliers to the industry. AHAM's membership includes over 150 companies throughout the world. In the U.S., AHAM members employ tens of thousands of people and produce more than 95% of the household appliances shipped for sale. The factory shipment value of these products is more than \$30 billion annually. The home appliance industry, through its products and innovation, is essential to U.S. consumer lifestyle, health, safety and convenience. Through its technology, employees and productivity, the industry contributes significantly to U.S. jobs and economic security. Home appliances also are a success story in terms of energy efficiency and environmental protection. New appliances often represent the most effective choice a consumer can make to reduce home energy use and costs.

AHAM is also a standards development organization, accredited by the American National Standards Institute (ANSI). The Association authors numerous appliance performance testing standards used by manufacturers, consumer organizations and governmental bodies to rate and compare appliances. AHAM's consumer safety education program has educated millions of consumers on ways to properly and safely use appliances such as portable heaters, clothes dryers, and cooking products.

AHAM and its members are committed to providing energy efficient home appliances that have a direct positive impact on the lives of consumers. Refrigerators are being produced at larger capacities, and yet are 50 percent more efficient than they were 20 years ago. Products with an added ENERGY STAR designation are at least 20 percent more efficient than the federal standard. On average, a modern refrigerator uses only the same amount of electricity as a 50 Watt light bulb. Clothes washers are another example of the energy efficiency success with tub capacities growing larger, and energy consumption declining. A new clothes washer uses 73 percent less energy than it did in 1990. In fact, replacing an 8 year old washer with one of average efficiency will save the American consumer \$130 per year in utility bills, and more than 5,000 gallons of water per year. ENERGY STAR models enjoy additional energy and water savings. Dishwashers, room air conditioners, freezers and other major appliances offer similar energy efficiency gains.

FEDERAL STANDARDS

We support federal efficiency standards in lieu of state standards and have been involved with and supported appliance related energy legislation for 30 years. One, uniform standard throughout the U.S., and even throughout North America and beyond, is preferable to a patchwork of 50 disconnected state-by-state standards. Federal appliance standards based on industry input and agreement is a path to more reasonable regulation and protection of consumer interest in a full diversity of products by manufacturer, brand, features and price points. Rational, certain standards with sufficient lead time, when coupled with incentive programs, can also enhance U.S. employment.

By participating in consensus negotiations leading to legislated standards or those which are the subject of multi-party petitions to Department of Energy (DOE), AHAM has assisted DOE to first catch up to and now meet the rulemaking schedules in EPCA. Congress has set DOE a daunting task. There have been numerous new rulemakings required with more scheduled. The chart below shows the many standards for our products and how far into the future standards are already in the queue to be revised.

Effective Dates of Standards

Appliance	Effective Year of Standard												
	1984	1989	1994	1999	2003	2007	2009	2010	2011	2012	2013	2014	2015
Refrigerators/Freezers	Original	1st Update			2nd Update								3rd Update
Room Air Conditioners	Original		1st Update										2nd Update
Clothes Dryers	Original		1st Update	Reviewed									2nd Update
Clothes Washers	Original				2nd Update	3rd Update			4th Update				5th Update
Dishwashers	Original		1st Update					2nd Update				3rd Update	
Kitchen Ranges and Ovens	Original										Reviewed	1st Update	
Dehumidifiers							Original						
Microwave Ovens											Original		

The agreement that INCAAA would implement, for AHAM's products, represents energy standards that largely already are being pursued by the DOE based on deadlines in previous legislation or a court imposed consent decree. Enacting these standards into law does not add to the burden industry would face in any case through mandatory rulemakings and provides added lead time and certainty which is welcome in these economically trying times.

ENERGY EFFICIENT AND SMART APPLIANCE AGREEMENT OF 2010

Last year, after months of intense negotiations, with the technical assistance and encouragement of DOE, which was greatly appreciated and helpful, the Energy Efficient and Smart Appliance Agreement was finalized by a number of stakeholders. Supporters of the agreement are as follows:

- Association of Home Appliance Manufacturers
- American Council for an Energy-Efficient Economy
- Appliance Standards Awareness Project
- Natural Resources Defense Council
- Earthjustice
- Alliance to Save Energy
- Northwest Power and Conservation Council
- Northeast Energy Efficiency Partnerships
- California Energy Commission
- Demand Response and Smart Grid Coalition
- Consumer Federation of America
- National Consumer Law Center
- Alliance for Water Efficiency

The Energy Efficient and Smart Appliance Agreement saves energy and increases our energy independence. We estimate that fully implemented this agreement will lead to improved product energy efficiency saving more than 9 Quads of energy over 30 years (the U.S. uses approximately 100 quads a year). Further, it requires and incentivizes clothes washers and dishwashers to use nearly 5 trillion less gallons of water over 30 years. Over that same 30 year time period, greenhouse gas emissions will be reduced by approximately 550 million metric tons of CO₂. Through these energy and water savings, consumers will save billions of dollars.

But standards are not enough and are of decreasing utility as our products get more efficient and need to be supplemented with "pull" programs. An important but non-legislative component of this agreement is that it will jump start the smart grid by helping to deploy smart appliances nationwide and enable consumers to better take advantage of demand-response and real-time pricing opportunities. This will be accomplished when ENERGY STAR agrees to an industry efficiency advocate-consumer group petition requesting recognition of the benefits of smart appliances.

The third and final important pillar of this agreement are incentives to manufacturers to increase the production of super-efficient products—over and above ENERGY STAR levels—thereby saving even more energy and water and encouraging more job creation. These manufacturer tax credits are a model of success and require continued improvement in the production of superefficient appliances because the tax credits can only be claimed for increased production over previous years even during a recession. These incentives impact approximately 46,000 manufacturing jobs (19,000 direct; 27,000 supply chain/support) and creates new jobs, including bringing back to the U.S. jobs that were outsourced in earlier years.

Lastly, these consensus agreements reduce the amount of resources that the Department of Energy needs to provide for the rulemakings. In this era of increased focus on federal use of resources, these standards agreements should be embraced by Congress as they have been by the Administration so that resources can be used more effectively.

The agreed to refrigerator standards provide 20 to 30 percent more energy savings relative to current standards for major product categories, which is the current EN-

ERGY STAR level or the previous top tax credit level. The new standards take effect in 2014. It also will include icemaker energy.

The new clothes washer standards would be effective in 2015. It includes different standards for top-loaders and front-loaders and top-loader standards have a two phase increase to allow manufacturers time to develop and re-tool for higher levels of efficiencies. Front-loaders will save 43 percent more energy and 52 percent more water relative to current standard. Top-loaders will save 26 percent more energy and 16 percent more water savings in 2015 and 37 percent more energy and water in 2018.

The new clothes dryer standards will save 5 percent more energy using the current test procedure. Additional energy will be saved by modifying the test procedure to address the effectiveness of auto termination and reduce over-drying. These standards would take effect in 2015.

The new room air conditioner standards, which would be effective in 2014, will save 10 to 15 percent more energy for the major product classes.

The dishwasher standards would reduce energy use by 14 percent and water use by 23 percent and would take effect in 2013.

The estimated energy and water savings from these standards are shown in the graph below.*

CONCLUSION

AHAM has a history of working cooperatively with Congress to provide consensus agreements with all stakeholders. We think this is a preferable path because it provides stakeholders increased flexibility to bring in other issues, such as ENERGY STAR, that cannot be done through the confinements of a normal rulemaking process. We strongly encourage this committee to approve INCAAA and look forward to continuing to work with this Committee on these and other issues.

The CHAIRMAN. Thank you very much.

Mr. Yurek, go right ahead.

STATEMENT OF STEPHEN YUREK, PRESIDENT AND CHIEF EXECUTIVE OFFICER, THE AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE

Mr. YUREK. Thank you, Mr. Chairman. I appreciate the opportunity to be with you today to discuss our support for S. 398. I'm Stephen Yurek, the President and CEO of the Air-Conditioning, Heating, and Refrigeration Institute, the trade association that represents manufacturers of heating, cooling, water heating and commercial refrigeration equipment.

I'm going to stress 2 points that are in my written comments.

The first one is that this is a jobs bill.

The second is that this is essential if Congress passed this bill because many of the provisions in our consensus agreements cannot be enacted without legislation.

On my first point this is a jobs bill representing over 250,000 American manufacturing jobs which represent the jobs that our members have in the U.S. Because our equipment requires professional installation there's an additional million jobs at stake related to the distribution, installation and maintenance of this equipment. In addition, as I stated, this is 250,000 American jobs.

It also represents a \$2.5 billion positive trade balance. This is equipment that is manufactured in the U.S. What S. 398 does is provides these manufacturers in this industry with predictability. With predictability this allows investment, investment in innovation, investment in manufacturing and investment in jobs. Ultimately it provides and reduces the cost to consumers.

* Graph has been retained in committee files.

My second point related to that this bill needs to be passed immediately relates to that there are many provisions in these consensus agreements that cannot be enacted by DOE but require Congressional action.

These 5 products that we represent relate to water heaters. In this bill there's a provision where DOE is required to make a rule-making on the test procedures for water heaters. The current test procedures are over 30 years old and do not reflect current technology available in the market.

For heat pump pool heaters these products are currently not federally regulated products. They are being regulated by states around the country. What this bill does is make them federally covered products and have one national standard.

For small duct, high velocity and through the wall products, these products are currently being sold in the U.S. under a waiver from the Department of Energy. These are special projects used for houses that cannot have the regular systems that are available on the market. Without this waiver they would not be able to be sold. What this legislation does is make them a specific product class.

As for air conditioning, heat pumps and furnaces, there are provisions in the consensus agreement that allow local States and municipalities to enact building codes that will allow higher efficiency levels for products in new construction. DOE does not have this authority to allow this under current legislation.

Finally, as it relates to service over the counter commercial refrigeration products which Senator Burr was mentioning earlier. These are the ones this evening or tomorrow as you're heading back home and you grab that sandwich or bottle of water before you head onto the plane. That is the kind of equipment we're talking about here.

This equipment was inadvertently included in the definition of commercial refrigeration equipment in the 2005 bill. This bill was intended to cover those products that you see in the supermarket, much larger commercial refrigeration systems. Because of the efficiency levels required technology today cannot meet those levels. Therefore without this legislation making this a separate product class and setting efficiency levels for this equipment that they can meet. These products will no longer be able to be manufactured in the U.S. which means plants will be closed and jobs would be lost.

Therefore we need Congress to act immediately. We were close last year, as the chairman mentioned in his opening comments. But these legislative provisions need to be enacted as soon as possible because without that we won't have jobs, predictability and the ability to invest in our future.

Thank you.

[The prepared statement of Mr. Yurek follows:]

PREPARED STATEMENT OF STEPHEN YUREK, PRESIDENT AND CHIEF EXECUTIVE OFFICER, THE AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE

Mr. Chairman, Mrs. Murkowski, and Members of the Committee:

I am pleased to be with you today to discuss our support for S. 398. My name is Stephen Yurek, and I am president and CEO of the Air-Conditioning, Heating, and Refrigeration Institute—the trade association that represents manufacturers of heating, cooling, water heating, and commercial refrigeration equipment.

We are proud that our industry is one of the very few U.S. industries that enjoys an over \$2 billion positive balance of trade. We build equipment here in North

America and export it to nations around the world. The manufacturing side of our industry alone is responsible for some 250,000 American jobs, and when you add in distribution, installation, and maintenance, that figure soars to nearly one million jobs across all 50 states and all U.S. territories.

To begin, I want to commend you, Mr. Chairman, and Ranking Member Murkowski for re-introducing this bill. As you know, we came within one vote of passing it by unanimous consent during the lame-duck session. We hope that we can recapture that momentum and work with you and your staff to get it passed this year, ideally before the Department of Energy issues its final rule on new federal efficiency standards for central air conditioners and furnaces in May.

I appreciate the opportunity to briefly comment on the key provisions of this bill that pertain to our industry, but first, it is important to note that the consensus agreements contained in this bill are just that: Consensus agreements. That means that industry and energy efficiency advocates spent a great deal of time in a process of give and take over the better part of a year to come to agreement on these provisions.

And when you consider that just a few years ago, we would have been much more likely to duke it out in a courtroom, it is even more apparent that this is a better way.

It is important for us to try and work together with our friends in the environmental community, because what we've found through this process and several others is that we have essentially the same goals, but perhaps different ways of achieving them. By working together, we have not only managed to craft these agreements that will save significant amounts of energy and money, but we've also established and strengthened a trust among our organizations that never existed before.

This legislation requires the Department of Energy to conduct a rulemaking to consider the revision of its residential water heater test procedure. Updating the test procedure will ensure efficiency ratings that better fit the range of water heaters in the market today and will enable consumers to more easily estimate energy savings.

We are very pleased that you included in S. 398 the consensus agreement establishing for the first time an efficiency standard for heat pump pool heaters. This standard will provide stability in the marketplace by leveling the playing field to enable all manufacturers to compete fairly.

The addition of the agreement we reached with advocacy groups to establish a federal efficiency standard for a specific type of commercial refrigeration product known as service-over-the-counter—the type of product from which you might, for example, grab a sandwich or soda before you board an airplane—is also appreciated. This standard is necessary because the legislation enacted by Congress in 2005 establishing federal energy efficiency standards for commercial refrigeration products inadvertently negatively impacted this product category. So, without this change, these products will literally no longer be able to be manufactured and sold, seriously impacting jobs in many different states.

The inclusion of standards for through-the-wall central air conditioners, through-the-wall heat pumps, and small duct, high velocity systems is also appreciated, and will enable manufacturers of those products to have predictability regarding efficiency levels for years to come.

Currently, efficiency levels for this equipment are established by waivers from DOE. Therefore, legislation is necessary to create these product categories and establish some predictability for manufacturers.

Finally, I want to express AHRI's support for provisions in S. 398 that implement our consensus agreement on residential heating and cooling equipment—this agreement is another great example of industry and advocacy groups collaborating to save energy and improve the environment.

The consensus agreement, which will begin to take effect in 2013—assuming final passage of this legislation—represents a major step forward in the nation's drive to increase energy efficiency.

It establishes a new, national efficiency standard for residential heat pumps, and new standards for central air conditioners in three regions. In hotter areas, like the southeast and southwest, the new standard for air conditioners is appropriate for that climate, while the current federal minimum standard remains in place for cooler areas. In this way, the consensus agreement lays the groundwork for significant energy savings and helps make heating or cooling homes more cost-effective, regardless of climate.

The agreement also contains an important provision that cannot be realized without congressional action—a provision that would allow the next generation of homes to be more energy efficient by providing states the option of adopting building codes

for new construction with more stringent energy efficiency levels than they can under existing law.

I would also like to affirm the statement you made when introducing this bill, Mr. Chairman. You said, and I quote: "Greater energy efficiency saves consumers money, strengthens our economy, enhances our national security, creates jobs, and reduces environmental impacts."

All of that is true, and according to our joint analysis of just the provision on central air conditioners and heat pumps, the nation will save about 3.7 quadrillion Btu (quads) of energy between 2013 and 2030. That's enough to provide for the energy needs of 18 million households for a year. These energy savings will result in annual greenhouse gas emission reductions of 23 million metric tons of CO₂ in 2030, an amount equal to that produced by approximately 4 million cars every year.

Finally, this agreement will ultimately save consumers about \$13 billion in today's dollars, even after considering the increased cost of more efficient equipment.

As I conclude, please allow me to make one final point: In an atmosphere where every federal dollar is scrutinized, I would note that by taking the initiative, we have potentially saved the Department of Energy—and thus America's taxpayers—millions of dollars, and have saved DOE staff countless hours of work—hours that can be spent on other activities.

Again, I want to thank the Committee and your staff for the hard work in putting this bill together, and I thank you for the opportunity to testify, Mr. Chairman.

The CHAIRMAN. Thank you very much.
Mr. Pitsor.

STATEMENT OF KYLE PITSOR, VICE PRESIDENT, GOVERNMENT RELATIONS, NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

Mr. PITSOR. Chairman Bingaman and Ranking Member Murkowski on behalf of the National Electrical Manufacturers Association, I'm Kyle Pitsor, Vice President of Government Relations for NEMA. NEMA is the trade association representing 430 manufacturers of electrical and medical equipment. I'm pleased to be here today to present NEMA's views on the importance of the National Energy Efficiency Standards program and to offer our views on S. 398 and S. 395.

NEMA supports the robust national energy conservation program under the Energy Policy and Conservation Act. We believe that a strong national program of standards, test procedures and labeling is critical to effectively maximize energy savings in the Nation and for the consuming public. Products are manufactured and distributed on national and sometimes global basis. It is key that energy conservation regulation for products occur at the Federal level rather than a patchwork of conflicting State standards.

Mr. Chairman in my written statement I provide NEMA's positions on various sections of 398. I'll only mention a few of those in my oral comments.

In section 18 in outdoor lighting efficiency standards 2 years ago the industry and other stakeholders negotiated a consensus proposal for the establishment of Federal minimum efficiency standards for pole mounted outdoor lighting. Given changes in the standards in the market since that time, we are presently seeking to revise that consensus proposal and hope to have a package for your consideration for inclusion in this legislation.

In section 22, NEMA strongly supports the need for a study on the Appliance Standards program and the level of compliance and enforcement of the Federal efficiency standards. Our industry has invested heavily in the Federal program. We are concerned about

certain imported products that are not in compliance with Federal regulations.

In section 24, dealing with technical corrections since the passage of the Energy Independence and Security Act of 2007, several items have been identified that weren't technical correction to address implementation and other clarification issues. We urge prompt action on the package contained in the bill.

Now let me turn, Mr. Chairman, to S. 395, which would repeal Subtitle B of EISA 2007 law. Today I'm here to reaffirm our industry support for public policies that encourage transitioning to more energy efficient lighting and specifically the bipartisan energy efficient light provisions in EISA 2007. NEMA does not support its repeal.

First let me correct a common misunderstanding with the EISA 2007 provisions. They do not ban the incandescent light. Let me repeat that. They do not ban incandescent light bulbs nor do they ban the use—nor do they mandate the use, excuse me, nor do they mandate the use of compact fluorescent lamps or CFLs.

Second the EISA law reduces lighting energy by setting a maximum wattage that any bulb can consume for a given light output. We call that lumens in the industry or the late term brightness. The light output range is based—are based on the brightness that consumers currently experience with today's 100, 75, 60 and 40 watt light bulbs.

For example, consumers will still be able to purchase a general service incandescent light bulb. But instead of using 100 watts as in today's bulb that gives out 1600 lumens they'll be able to purchase a new 72 or 70 watt light bulb that produces the same amount of lumens, the same quality of light. It's fully dimmable and it lasts longer than today's incandescent light bulb. This bulb represents a 28 percent savings to the consumer and similar savings will be achieved with the 75, 60 and 40 watt bulbs. As I mentioned these advanced bulbs are just like today's bulbs in being fully dimmable and have the same quality and feel and look of traditional light bulbs.

Now if a consumer wants greater energy savings they have additional choices. They can opt for a compact fluorescent bulb which provides the same 1600 lumens but it uses only 25 or 26 watts of power. This represents a 75 percent savings to the consumer and it lasts about eight to ten times as long as today's traditional incandescent light bulb.

Additional advanced lighting products are also entering the marketplace such as high brightness LED bulbs which represent over a 75 percent savings with very long lives. Here's 2 examples that are available in the market today. These range about 25,000 hours as opposed to 750 hours of today's traditional bulb. These LED bulbs are appearing in the low wattage ranges in the 60 and 40 area and will gradually come into the higher wattage and lumen packages.

My point here is that the EISA 2007 provisions expand and provide consumers with a variety of energy efficient light bulb choices examples of which which I've shown. While saving them money on their electrical bills. Providing them light quality and ambiance options to suit their needs.

When some people hear of change they become anxious. It's important to note that the law is implemented over several years beginning this January 2012. Industry has and is making the necessary investments to meet the new requirements including a new label that will occur on light bulb packages that will assist consumers in comparing the expanded options available to them. Additional consumer education and informational materials are also taking place including retailer point of sale information and websites like lightbulboptions.org. As an industry our industry has committed heavily to ensuring a smooth transition to more energy efficient lighting.

In conclusion NEMA supports the consensus provisions in S. 395. We support the lighting efficiency provisions in the Energy Independence and Security Act of 2007. Do not support the repeal.

Thank you.

[The prepared statement of Mr. Pitsor follows:]

PREPARED STATEMENT OF KYLE PITSOR, VICE PRESIDENT, GOVERNMENT RELATIONS,
NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

Chairman Bingaman, Ranking Member Murkowski and members of the Committee: On behalf of the National Electrical Manufacturers Association (NEMA), I am Kyle Pitsor, Vice President for Government Relations. NEMA is the trade association of choice for the electrical and medical imaging equipment manufacturing industry. Our approximately 430 member companies manufacture products used in the generation, transmission and distribution, control, and end-use of electricity, and represent about 350,000 jobs. These products are used in utility, medical imaging, industrial, commercial, institutional, and residential applications. Domestic production of electrical products sold worldwide exceeds \$120 billion.

I am pleased to be here today to present NEMA's views on the importance and role of the national energy efficiency standards program and to offer our views on S. 398 and S. 395.

I would like to note that our member companies support advancing energy efficiency in the marketplace. NEMA members and their employees are at the very heart of our national effort to reduce energy use through the research, development, manufacturing, and deployment of energy-efficient products and technologies. Many energy efficient technologies exist, and what we all must strive for is wider recognition, deployment, and use of today's state-of-the-art products and technologies, as well as support for emerging technologies.

NEMA supports a robust national energy conservation standards program under the Energy Policy and Conservation Act (EPCA), as amended. We believe that a strong national program of standards, test procedures and labeling/information disclosure is critical to effectively maximize energy savings for the Nation and the consuming public. Products are manufactured and distributed on a national (and sometimes global) basis, and it is key that energy conservation regulation for products occur at the federal level.

Mr. Chairman, I would like to provide our comment on the legislation and have organized our testimony based on the bill's sections. We also offer comment on several other topics following our section-by-section comments which we hope will be considered as the legislation moves forward.

S. 398 "IMPLEMENTATION OF NATIONAL CONSENSUS APPLIANCE AGREEMENTS ACT OF
2011"

Section 6—Test Procedure Petition Process

The establishment of energy efficiency standards for federally-covered products and equipment is predicated on the use of recognized and established consensus test procedures. Without agreed upon test procedures, it would be impossible to compare efficiency claims among products. The current program is based on incorporation of relevant test procedures within the regulatory program under EPCA.

Once the Department of Energy (DOE), or in some cases Congress, establishes the test procedure for a regulated product, it is important that the test procedure be evaluated as time passes to ensure that it stays current with the energy efficiency levels mandated for the product. When DOE undertakes reviews of the efficiency

standard for a product, it also undertakes a review of the applicability of the test procedure and whether it needs to be changed or not.

The proposed legislation would permit DOE to consider amending a test procedure as a result of petition, conduct a public rulemaking to determine if the test procedure should be amended or not, and set deadlines. It should be noted that the granting of the petition does not establish a presumption that the test procedure should be amended, only that DOE must undertake a rulemaking to make a decision on what changes to the procedure are warranted, if any, and to publish such a determination. In addition, for industrial equipment, the legislation would require DOE to conduct a test procedure rulemaking at a minimum of once every seven (7) years on a mandated basis.

NEMA supports the need to keep test procedures current based on the use of recognized and established consensus test procedures. Petitions under the proposed legislative changes need to include detailed information on why a current procedure should be amended, otherwise we fear that very general petitions could be filed that would tie up DOE resources unnecessarily and be counterproductive to the administration of the appliance standards program.

Section 17—Prohibited Acts

NEMA supports this section. We believe it is important that channel partners in the distribution and sale of federally-regulated products share responsibility in making certain that consumers and end-users receive the benefit from purchasing energy-efficient products and equipment that meet federal minimum efficiency standards. Today, federal law places that responsibility only on manufacturers and private labelers, which creates a loophole when it comes to compliance in the marketplace. The loophole unfairly denies manufacturers of compliant, efficient products of sales opportunities because there are not uniform incentives to comply with the law. The proposed section would ensure that all players in the manufacturing, sales, and distribution channels have a responsibility.

Section 18—Outdoor Lighting Efficiency Standards

Two years ago, the industry, environmental advocates, lighting designers, and other parties negotiated a consensus proposal for the establishment of federal minimum efficiency standards for pole-mounted outdoor lighting. Given changes in the standards and the market since that time, we are presently seeking to revise that consensus proposal and hope to have a package for your consideration to be added to this legislation.

The current Section 18 in S. 398 does contain a provision that would complete the transition to phase-out the use of mercury vapor outdoor lighting which was begun with provisions in the Energy Policy Act of 2005 that prohibit the manufacture or importation of mercury vapor ballasts. There are several more efficient technologies to replace mercury vapor that benefit consumers. NEMA supports these provisions.

Outdoor lighting consumes over 178 TWh according to Navigant Consulting (data from 2007), the equivalent output of about 17 nuclear plants (1200 MW) or 34 coal-burning plants. Stated another way, approximately 22 percent of all the electricity generated in the United States is used for lighting, and outdoor lighting represents about 20 percent of that total. So, new federal standards, together with exterior lighting controls, would result in lowering energy bills while providing users with good quality lighting.

Section 21—Electric Motor-Driven Systems Assessment

Section 21 of this legislation is a requirement for the Department of Energy to conduct a motor market assessment and commercial awareness program. NEMA represents all of the major electric motor manufacturers. Electric motors convert 65-70% of the electrical energy used in commercial and industrial applications into mechanical energy used to drive pumps, fans, compressors, blowers, and material handling equipment. The Market Assessment objectives are to develop a detailed profile of the current stock of motor-driven equipment in U.S. and survey how the installed base of industrial horsepower motors is broken down. This updated assessment will support future legislative, regulatory, and voluntary programs aimed at increased adoption rate of motor systems offering greater energy efficiency. Other items this study will accomplish are: characterize and estimate the magnitude of opportunities to improve the energy efficiency of industrial motor systems; survey how many systems use drives, servos and other higher technologies; how many systems use process control, by application category, pump, compressor, fan/blower, material handling. Furthermore, it will develop an updated profile of current motor system purchase and maintenance practices; how many companies have motor purchase and repair specifications, including company size, number of employees. And finally, it

will develop methods to estimate the energy savings and market effects attributable to the DOE's Save Energy Now Program.

In addition to serving DOE's program planning and evaluation needs, the market assessment is designed to be of value to manufacturers, distributors, engineers, and others in the supply channels for motor systems. It would provide a detailed and highly differentiated portrait of their end-use markets. For factory managers, this study presents information they can use to identify motor system energy savings opportunities in their own facilities, and to benchmark their current motor system purchase and management procedures against concepts of best practice.

Section 22—Study of Compliance with Energy Standards for Appliances

NEMA strongly supports the need for a study of the appliance standards program and the level of compliance and enforcement of federal efficiency standards. Our industry has invested heavily in the federal program of efficiency standards, test procedures and product labeling, and are concerned about the levels of imported products that are not in compliance with federal requirements for certain federally-covered products. For instance, in the case of federally-regulated integral electric motors, the U.S. industry members has raised concerns about equipment with non-compliant embedded motors coming into the United States which makes U.S. original equipment manufacturers that build products here uncompetitive and costs jobs. The study will be valuable in making recommendations on how our enforcement regime should be structured in light of today's global competitive environment, and how the DOE and the Customs and Border Protection bureau of the Department of Homeland Security coordinate enforcement on imported products that must meet federal efficiency requirements.

We also suggest that the General Accountability Office (GAO), in coordination with the Department of Energy, be involved in conducting the study of compliance, compliance options, and enforcement.

Section 23—Study of Direct Current Electricity Supply in Certain Buildings

The potential energy savings from the implementation of a DC electricity supply for individual buildings could be significant on the basis of elimination of the multitude of individual power supplies used for various information technology, audio-visual and other devices. Use of a centralized DC electricity supply would require major investment in new wiring devices (to prevent misconnection with existing systems), installers would need to establish new practices, and rules for safe use would need to be developed. The most practical use would be for new construction or major renovation, as separation of these circuits from the installed alternating current wiring must be maintained. A study would be highly beneficial to identify the key considerations and limitations for implementation of direct current electricity supply.

Section 24—Technical Corrections to EISA

Mr. Chairman, since the passage of the Energy Independence and Securities Act of 2007 (EISA 2007), several items have been identified that warrant "technical correction" to address implementation issues and obtain clarification. Since the passage of EISA, NEMA has been working closely with various stakeholders, several of which are testifying today, in obtaining a consensus agreement on a technical corrections bill. We have agreed on a package of non-controversial corrections and we urge consideration of inclusion of a technical corrections package as part of this legislation. Several of these corrections are critical in nature. For instance, the EISA 2007 electric motor provisions came into force on December 10, 2010, yet the corrections needed to guide the Department of Energy and the industry on product coverage and requirements have not been enacted into law. We urge prompt action in this regard.

CERTAIN INCANDESCENT REFLECTOR LAMPS (LIGHT BULBS)

NEMA manufacturers and environmental advocates have also come to a consensus agreement on updated language for the consideration of a Department of Energy rulemaking on certain reflector bulbs and consideration of a new metric for measuring energy efficiency of reflector bulbs. This is an updated agreement from what was in Section 18 of S. 3924 in the 111th Congress. We ask that the Committee include this consensus agreement into S. 398 at the next opportunity.

The consensus agreement language proposed would read as follows:

STANDARDS FOR CERTAIN REFLECTOR LAMPS.

Section 325(i) of the Energy Policy and Conservation Act (42 U.S.C. 6295(1)) is amended by adding at the end the following:

“(9) REFLECTOR LAMPS.—

(A) In conducting rulemakings for reflector lamps after January 1, 2014, the Secretary shall consider:

- “(i) incandescent and non-incandescent technologies; and
- “(ii) a new energy-related measure, other than lumens per watt, that is based on the photometric distribution of those lamps.

FEDERAL PREEMPTION

A fundamental tenet of the Energy Policy Conservation Act, as amended, is the significant and longstanding principle of express federal preemption respecting energy efficiency standards. The twin cornerstones of the “comprehensive national energy policy” enacted by Congress in 1975 to implement EPCA (S. Conf. Rep. No. 94-516 at 116 (1975)) are:

1. The establishment of national standards for energy efficiency, testing and information disclosure for “covered products,” and
2. Express Federal preemption of State laws and regulations respecting energy efficiency standards, testing, and information disclosure for those covered products.

The exceptions to Federal preemption were intentionally narrow: (a) State petitions for waivers required that States show there were “unusual and compelling State and local interests” that were “substantially different in nature and magnitude from those of the Nation generally,” so that achieving the waiver would be difficult; (b) State procurement standards would be permitted; (c) and a narrowly drawn exception for State and local building codes that must meet seven requirements. NEMA supports the current federal and state preemption provisions.

I mention these matters because as Congress considers improvements to the federal program, we need to ensure that resources are provided so that the agencies charged with administering the program are able to do so, and that the agencies use those resources effectively and efficiently. In the past, some have proposed weakening pre-emption because of missed deadlines, which ends up penalizing the manufacturers for government’s lapse.

ATTACHMENT.—S. 395 THE “BETTER USE OF LIGHT BULBS ACT”

Mr. Chairman, we are pleased to present our views on S. 395 which would repeal Subtitle B of the EISA 2007 law. This would include repeal of the federal energy efficiency standards for general service light bulbs, repeal of federal efficiency standards for certain spot and floodlights (incandescent reflector bulbs), repeal of certain federal efficiency standards for metal halide lighting fixtures (used in industrial, commercial, and outdoor applications), repeal use of energy efficient lighting and use of Energy Star products in federal buildings, and repeal energy labeling of TVs, personal computers, and other consumer electronics products.

The Lamp Section of NEMA represents 15 companies that sell over 95 percent of the light bulbs (lamps) used in the United States. NEMA members are engaged in all the various light bulb technologies including incandescent (and halogen), fluorescent, and solid state lighting (light-emitting diodes, LEDs)—and serve all lighting application markets.

Today, I would like to reaffirm our industry’s support for public policies that encourage transitioning to more energy-efficient lighting, and specifically the energy-efficient light bulb provisions in EISA 2007. Lighting use in the U.S. consumes 20-22 percent of all electricity generated. Approximately 40 percent of the electrical energy consumed in an office building is from lighting use, and about 12 percent of residential electrical energy is for lighting.

First, let me emphasize a common misunderstanding with the EISA 2007 provisions. They do not “ban” incandescent light bulbs, nor do they mandate the use of the common spiral compact fluorescent lamp (CFL). The EISA 2007 provision focuses on “general service” light bulbs and raises the efficiency standards of those bulbs. The standards do not cover a variety of bulbs including chandelier bulbs, specialty and appliance bulbs, or 3-way bulbs.

Second, the EISA provisions reduce lighting energy consumption by reducing the connected load; that is “watts.” The law does this by setting a maximum wattage that any bulb can consume for a given lumen range (amount of light from a bulb, i.e. its “brightness”). As a result of this approach, the lumen ranges in the law are consistent with consumer experience with today’s standard general service light bulb categories of 100, 75, 60, and 40 watts.

For example, consumers will still be able to purchase incandescent light bulbs, but instead of using 100 watts for 1600 lumens (brightness), the new advanced incandescent/halogen bulb only uses 72 watts for the same amount and quality of light. This represents a 28 percent savings in the connected load to the consumer. Similar savings will be achieved for 75 watt, 60 watt, and 40 watt bulbs in the lumen ranges that consumers are used to for those products. These incandescent bulbs can be dimmed just like today's inefficient bulbs, will fit the same sockets, and have the same shape and feel, and quality of light.

The light appearance of these advanced incandescent/halogen bulbs does not differ from today's inefficient incandescent bulbs. Because features between newer incandescent/halogen technologies and old incandescent technologies are almost indistinguishable, there is no utility lost in replacing an inefficient incandescent bulb with a more effective incandescent.

If a consumer wants greater savings, they can opt for a compact fluorescent lamp that provides the 1600 lumens (brightness) but uses only 25-26 watts. This represents a 75 percent savings in terms of wattage per bulb to the consumer. Additional advanced lighting products are also entering the marketplace such as high brightness LED bulbs which represent over 75 percent connected-load savings and very long lives. These LED bulbs are already appearing in the market in the lower wattage replacement areas (40 and 60 watt equivalent lumen ranges) today, and with further advancements into the higher lumen ranges in the next few years.

My point is that the EISA 2007 provisions require manufacturers to reduce the electric power a light bulb uses in producing a certain output of light. The energy savings for the nation that EISA 2007's lighting provisions will generate are substantial, and the opportunity to conserve a substantial amount of energy should not be overlooked. There are and will be a wide variety of light bulb options for consumers, including incandescent/halogen, compact fluorescent, and new advanced technologies like high brightness LED bulbs. Maintaining and expanding consumer choice is a critical aspect of the EISA law.

The law provides the transition to more energy-efficient light bulbs take place over several years. The EISA requirements for lumen output and wattage maximums start January 1, 2012 for the 100 watt bulb (changes to 72 watts maximum), January 1, 2012 for the 75 watt bulb (changes to 53 watts maximum), and January 1, 2014 for the 60 and 40 watt bulbs (changes to 43 and 29 watts, respectively). EISA 2007 permitted California to adopt the federal standards one year earlier.

This multi-year transition was critical for manufacturers to have an orderly process to make the necessary capital investments, ensure suppliers of new raw materials, invest in new package designs, provide for safety testing and qualify the products. To repeal the EISA 2007 provisions would strand millions of dollars of investments that the industry has undertaken in the last 4 years, not only for general service bulbs, but also reflector bulbs and metal halide lights.

In addition, the multi-year transition provides time to undertake consumer education and outreach on the new lighting options by manufacturers, retailers, and other organizations. Further, manufacturers are including a new information label on light bulb packages to assist consumers in understanding and selecting the new lower wattage bulbs that provide the same quantity of light that consumer are used to. Industry has worked with the Federal Trade Commission to develop this new label and we are now moving forward with implementation. Industry has also developed educational information, such as the 12 "5 Ls of Lighting" brochure (attached to my testimony), websites like www.lightbulboptions.org, and point of sale information for retailers to use.

When NEMA testified before this Committee in 2007 on the pending EISA legislation, we noted that a federal regime was crucial in addressing the lighting market transformation. A host of state legislatures stretching from Connecticut and Rhode Island, to California and Nevada were considering widely varied state regulations. If states had set light bulb standards, manufacturers would have been faced with conflicting state requirement and a patchwork of rules would have resulted in different light bulbs for different states. This would have driven up consumer costs and created significant marketplace confusion. The EISA 2007 prevents that from happening and ensures a national market for lighting.

As an industry, the NEMA lighting manufacturers are committed to ensuring a smooth transition to more energy-efficient lighting that provides a continued choice of light bulb options for consumer selection. Our industry is investing heavily in research and development, innovation, and new products to meet consumers demand and interest for efficiency and light quality. More products are becoming available every day to fill the over 4 billion light bulb sockets in the United States.

CONCLUSION

In conclusion, NEMA supports the consensus provisions in S. 398 as outlined in my testimony, and we support the lighting efficient provisions in the Energy Independence and Security Act of 2007, and therefore oppose S. 395. NEMA members are committed to advancing the use and deployment of energy efficient technologies, and recommend the following:

1. Support a petition process to amend current test procedures, as needed (Section 6)
2. Support provision to enhance marketplace compliance of federal requirements (Section 17)
3. Support the study on compliance and enforcement of the appliance standard program, especially of concern with imported products (Section 22)
4. Support the Motor Assessment study and the study on benefits and costs of Direct Current supply in certain buildings (Sections 21 and 23)
5. Support prompt action to enact the "EISA 2007 Technical Corrections" package (Section 24)
6. Support adding a provision on certain incandescent reflector products
7. Support EISA 2007 Subtitle B "Lighting Efficiency" (Reject S. 395)

Mr. Chairman, Ranking Member Murkowski and Members of the Committee, thank you very much for the opportunity to provide these remarks and recommendations to the Committee today on behalf of our industry.

The CHAIRMAN. Thank you very much.
Dr. Cooper.

**STATEMENT OF MARK COOPER, DIRECTOR OF RESEARCH,
CONSUMER FEDERATION OF AMERICA**

Mr. COOPER. Mr. Chairman, members of the committee, I appreciate the opportunity to share our views on this important legislation.

There are 4 primary reasons that the Consumer Federation of America has long supported energy efficiency standards for home appliances and other consumer products. Why we support S. 398 and oppose S. 395.

First, the energy efficiency standards are consumer friendly. They will produce direct pocketbook savings for consumers. That is the reduction in the monthly bills for electricity and natural gas, exceed the increase in the cost of the technologies needed to lower energy consumption.

Second, the energy efficiency standards are technology neutral and pro competitive. The minimum efficiency standards establish a performance standard but do not dictate which technologies or how those standards should be met. Private sector firms compete around those standards in the marketplace developing technologies they think will meet the standard at the lowest price. The competition produces new goods and keeps costs down.

Third, energy efficiency standards are the most effective way to correct the undervaluation of energy efficiency in the residential market. The U.S. needs to lower its energy consumption and consumers need to reduce their home energy use. But numerous imperfections in the marketplace prevent consumers and the Nation from getting to the optimum level of energy efficiency.

Raising minimum efficiency standards lowers the supply side risk of investing in more efficient products. For manufacturers it helps the new products get to scale more quickly. On the demand side it addresses critical gaps in the consumer evaluation of, information about and motivation to purchase energy savings technology. It helps the market on both the supply and demand sides.

Finally minimum standards for home energy consumption enjoy widespread public support. We've submitted a public opinion poll which show that 95 percent of the consumers think it's beneficial to lower their consumption. They know it's good for their pocket-books. Almost 3 quarters support minimum efficiency standards.

Our analysis which we have also submitted for the record of the market failures is absolutely critical. We've identified a range of imperfections in the marketplace that lead it to undersupply efficiency. The public perception and support for these standards is, in fact, consistent with the economic reality. Performance standards that are technology neutral and pro competitive are the ideal way to address many of these market imperfections. Especially and as long as the statutes require they are economically practicable and technically feasible.

These standards are well within the frontier of what the industry can do which is why we've been able to hammer out this consensus agreement. So if you look at the marketplace and you see products that harm consumers. That are bad for national energy policy. That are bad for national security. You can get rid of them by a performance standard which is neutral and lowers the cost to consumers.

A performance standard makes us all better off. That is why the public supports them. That is why this Congress should support them as well.

Thank you.

[The prepared statement of Mr. Cooper follows:]

PREPARED STATEMENT OF MARK COOPER, DIRECTOR OF RESEARCH, CONSUMER
FEDERATION OF AMERICA

Mr. Chairman and Members of the Committee,

My name is Dr. Mark Cooper. I am Director of Research at the Consumer Federation of America (CFA). Formed in 1968, CFA is an association of some 300 non-profit organizations, working to advance the consumer interest through research, education, and advocacy. We greatly appreciate the opportunity to appear before you today to let you know of our support for S. 398, the Implementation of National Consensus Appliance Agreements Act of 2011 (INCAAAA) and to urge Congress to reject efforts to repeal appliance efficiency standards already on the books, and in this instance, S. 395, the Better Use of Light Bulbs (BULB) Act. We also think it is useful to share our overall consumer perspective on energy efficiency standards for home appliances and other consumer products.

We vigorously support the enactment of S. 398, the Implementation of National Consensus Appliance Agreements Act of 2011, to speed the adoption of appliance efficiency standards that were agreed to last year by manufacturers, efficiency, environmental and consumer groups, including CFA. We regret that the Senate failed to act on this non-controversial legislation at the end of the last Congress. And, we urge Congress to reject efforts to repeal efficiency standards that are already on the books. We support cost-effective energy efficiency standards for all appliances and consumer products that consume energy in the home.

It is noteworthy that in 2009, household expenditures on home energy, for electricity and natural gas, and other heating fuels, were \$2,000, equal to household expenditures on gasoline for the first time ever. This cries out for decisive action by policymakers to support and promote increased energy efficiency standards on all fronts. Consumers and our economy will benefit.

There are four primary reasons that we have long supported energy efficiency standards for home appliances and other consumer products.

First, the energy efficiency standards are consumer-friendly. They will produce direct pocketbook savings for consumers. The reduction in the monthly bills for electricity and natural gas exceed the increase in the cost of the technologies needed to lower energy consumption. The homes in which consumers live will command higher resale because they are more energy efficient.

Second, the energy efficiency standards are technology neutral and procompetitive. The approach to minimum efficiency standards in the INCAAAA bill, as well

as the earlier standards adopted by the Congress for lighting, establish a performance standard, but do not dictate how those standards are met. Private sector firms compete around those standards in the marketplace, developing the technologies they think will meet the standard at the lowest price. This competition produces new goods and keeps the cost down. Declining out of pocket energy expenditures allows consumers to spend more resources on other goods and services, which grows the economy.

Third, energy efficiency standards are the most effective way to correct the undervaluation of energy efficiency in the residential market. The U.S. needs to lower its energy consumption and consumers need to reduce home energy expenditures, but numerous imperfections in the marketplace prevent consumers and the nation from getting to the optimum level of energy efficiency. Raising minimum efficiency standards lowers the supply-side risk of investing in more efficient technologies for appliance manufacturers and helps new products get to scale more quickly. They address critical gaps in the valuation of, information about, and motivation to adopt energy saving technologies.

Finally, minimum standards for home energy consumption enjoy widespread public support, which makes an even more compelling case for S. 398, which includes several consensus agreements that are the product of a collaborative consensus building policy process. The public wants policy makers in Washington to work together to solve the nation's problems. When the representatives of the industry that produces the goods and proponents of energy efficiency including consumer groups, hammer out agreement on an important product attribute like energy efficiency, it would be foolhardy for Congress to turn its back on such a historic consensus.

The industry and technical experts at today's hearing will testify to the sound economic and technological basis for these standards, with which we whole heartedly agree. So in my testimony, I will focus on the last two points above, beginning with public support and then turning to the analysis of the need for standards to correct market imperfections that lead to market failure. I have attached two appendices that contain detailed analysis of these two issues.

PUBLIC SUPPORT

Appliance Energy Efficiency and Standards

The Consumer Federation of America has recently conducted a national random sample public opinion poll on home energy consumption and minimum efficiency standards for appliances. My analysis of the results is attached to this testimony as Appendix A.* We find that the public overwhelmingly recognizes the benefits of energy efficiency in the home and supports energy efficiency standards.

Specifically, we found:

- Nearly all Americans (95%) think it “beneficial for appliances like refrigerators, clothes washers, and air conditioners to become more energy efficient,” with 78% believing this increased efficiency to be “very beneficial.”
- Nearly all Americans (96%) think improved appliance efficiency is important for personal financial reasons—“lowering your electric bills”—with 80% considering this to be very important. However, large majorities also believe improved appliance efficiency to be important for environmental reasons—because it reduces the nation's consumption of electricity “to reduce air pollution” (92% important, 77% very important) and “to reduce greenhouse gas emissions” (84% important, 66% very important).
- Substantial majorities also favor improved energy efficiency of appliances even when this increases the purchase price of appliances. This support predictably varies with the payback period: 3 years (79% favor, 35% favor strongly), 5 years (73% favor, 32% favor strongly), and 10 years (60% favor, 29% favor strongly).
- Only about two-thirds of Americans (68%) are aware that the “government requires new appliances like refrigerators, clothes washers, and air conditioners to meet minimum energy standards.”
- Respondents who are aware of the minimum standards are more likely to support them (74% to 64%).
- But nearly three-quarters of Americans (72%) support “the government setting minimum energy efficiency standards for appliances,” with strong support from 28%.

We believe this is very compelling data that demonstrate clearly consumer desire and support for cost-effective energy efficient products.

* Appendix A has been retained in committee files.

Other Surveys on Efficiency

Our recent survey focused on appliance efficiency and minimum energy efficiency standards. There are other products that consume electricity in the home—lighting in particular—and other programs that provide incentives for energy efficient purchases. Recent public opinion polls by others have addressed these products and policies, and they yield similar results, which are worthy of mention.

Two recent polls address the issue of lighting. A USA poll found that 61 percent of respondents thought the law that raised efficiency standards was a good law. These parallel the findings of our appliance efficiency survey. A study by Sylvania found that when respondents were asked about the transition to more efficient light bulbs, twice as many said they are “excited. . . because Americans will use more efficient light bulbs,” as said they are “worried. . . because I prefer using traditional light bulbs. Younger respondents and those who had heard about compact fluorescent lights were more likely to say they were excited. This parallels our demographic and awareness finding.

A study by Consumers Union asked people who had purchased a more efficient appliance what motivated them: 74% said saving money, while 49% said the environment. This parallels our findings on the perceived benefits of appliance standards. Awareness of utility rebates for energy efficient appliances and for retiring inefficient appliances was 67%, which is quite close to the 68% awareness of appliance efficiency standards in our survey.

CFA has conducted extensive polling and analysis of fuel economy standards that yields similar results. Levels of support for the general concept of fuel economy standards are in the range of 60% to 70% and in the most recent survey, 59% of respondents supported a fuel economy standard of 60 miles per gallon for 2025. Payback periods are consistently the greatest concern, as is the case in the appliance survey. Payback periods for fuel economy investments of five years are viewed favorably by a large majority of respondents (73%) as they are for appliances (73%).

Broader Public Opinion

Some may feel that these findings fly in the face of broad public sentiment about the role of government. That is not the case at all. When the public is asked about specific actions that protect consumers or promote the public interest, they are quite supportive across a surprisingly large number of areas of economic activity. Public opinion polls show that 70 percent or more of the public wants the government to do as much or more with respect to distracted driving, food safety, fuel economy, privacy, oil drilling, the environment, and financial services, as well as energy efficiency.

In general, we find that the more deeply we delve into the specific areas, the higher the public support becomes. Our research shows that there is a consistent, significant positive correlation between perceived benefits and support for standards. We find that the more people know about energy consumption, the more they support the standards. When we explore the relationship between industry performance and standards, we find that support grows where respondents think the industry has not done a good job.

Standards are an Effective Response to Market Imperfections

Our analysis of the “energy efficiency gap” shows that the public perception of energy efficiency and the support for efficiency and standards is well-grounded in market reality. Our analysis of the energy efficiency gap identifies a number of market imperfections that cause the market to undersupply energy efficiency. Appendix B,* which was prepared for a proceeding on motor vehicle fuel economy standards, provides a detailed analysis of the causes of this market failure and why minimum performance standards are an ideal policy to address these market imperfections and ameliorate the market failure. The public attitudes and perceptions we find in surveys reflect the reality that consumers face in the marketplace. They understand that the marketplace does not produce the optimum level of investment in energy efficiency.

As described in great detail in Appendix B, economists and policy analysts with very different perspectives have identified a couple dozen causes of market failure when it comes to energy efficiency. In our analysis, we have grouped these into five broad areas—

- Societal issues where important values are not well reflected in market transactions: e.g. consumption and production externalities, national security values and environmental impacts.

*Appendix B has been retained in committee files.

- Structural conditions that result in inefficient outcomes: scale problems, bundling of multi-attribute products, product cycles, lack of availability, lack of experience with new products.
- Endemic tendencies of economic relationships that undermine key market functions: e.g. agency issues (e.g. landlord-tenant, builder-buyer), asymmetric information, first cost sensitivity.
- Transaction costs create frictions that impose costs and constrain exchange: e.g. sunk costs, new product risk & uncertainty, imperfect information.
- Behavioral, psychological and other human traits that bound “maximizing” actions, e.g. motivation, difficulty of calculation and discounting (projecting future energy consumption and prices).

These imperfections drive the market to an equilibrium at which the nation consumes far more energy than is economically efficient or socially desirable. Some analysts blame the market outcome on consumers and interpret it to mean that consumers apply an irrationally high discount rate to energy efficiency investments. We reject that claim.

The discount rate implicit in consumer purchases reflects the full range of market conditions on both the supply-side and the demand side. In fact, there is frequently a separation between the builder or purchaser of buildings and appliances and the user. Demand is most directly determined by producers (landlords and builders) not consumers. Even when they do consider efficiency investments, consumers may not find the more efficient appliances to be available in the marketplace. Purchasers may prefer less efficient products because they have lower first costs and are more familiar. Suppliers may not stock efficient appliances and may not install them properly, as it requires different skills or considerations. Thus, the marketplace may offer an inadequate range of options to consumers in many instances. Consumers and producers both exhibit a first cost bias. Individual firms have little incentive to invest in basic research or to deploy enabling technologies because they have difficulty capturing the gains. To be sure, there are imperfections on the consumer side as well. Consumers are not well-informed and are unprepared to conduct the appropriate analysis. They lack the information necessary to make informed choices and perceive differences in quality and the availability of options that may be based on inertia more than reality.

Performance standards that are technology neutral and procompetitive are an ideal way to address all of these imperfections, as long as the level chosen is well within the frontier of what is economically practicable and technologically feasible. The fact that industry and efficiency, environmental and consumer advocates have agreed on the level of the standards in the consensus agreements contained in S. 398, the INCAAA bill, is a good indication that the standards meet this basic criteria.

The following market imperfections that cause the appliance market to provide less efficiency than it should are addressed by performance standards:

<p>SOCIETAL FAILURES</p> <p>Externalities Information as a public good</p>	<p>ENDEMIC FLAWS</p> <p>Agency Asymmetric Information Moral Hazard</p>	<p>TRANSACTION COSTS</p> <p>Sunk Costs, Risk Risk & Uncertainty Imperfect Information</p>
<p>STRUCTURAL PROBLEMS</p> <p>Scale issues Bundling Cost Structure Product Cycle Availability</p>	<p>BEHAVIORAL FACTORS</p> <p>Motivation Calculation/Discounting</p>	

We hope you can appreciate the numerous reasons why the Consumer Federation of American supports appliance energy efficiency standards and their benefits to consumers. We believe S. 398, the INCAAA bill, should be adopted, and can't see any reason why it shouldn't be. The legislation will strengthen and improve energy efficiency for a wide range of consumer products. We also believe that the current standard for lighting products should be kept in place and that S. 395, the BULB Act, should be rejected. Our analyses have shown that consumers will be better off, and public opinion polls have found that this is what they want.

Thank you for this opportunity to share our views on appliance energy efficiency standards and legislation.

The CHAIRMAN. Thank you very much.
Mr. Brandston.

**STATEMENT OF HOWARD BRANDSTON, LIGHTING
CONSULTANT, HOLLOWVILLE, NY**

Mr. BRANDSTON. Chairman Bingaman, Ranking Member Murkowski, thank you for inviting me to testimony in support of S. 395, the Better Use of Light Bulbs Act.

I'm a lighting designer with over 50 years experience. I've completed nearly 3,000 projects in approximately 60 countries. I am particularly proud of the work I did for my country. A short list of that work you might recognize is the U.S. Pavilion at Expo 70 in Japan, Women's Rights National Historic Park, Seneca Falls, Memorial for Women in Military Service at Arlington National Cemetery and the relighting of the Statue of Liberty.

I'm here today to ask that you revisit a portion of the Energy Independence and Security Act of 2007 that provides for a de facto ban on traditional incandescent light bulbs. I firmly believe that the restrictions put on incandescent lamps will have a significant negative impact on almost every residence in our country. I believe how one lives in their home is a decision that rests with the occupant. Is not the purview of the government.

I believe this violates the very principles upon which this Nation was founded. I, as a devoted citizen, am most proud of, our freedom of our choice and our personal lives. What disturbs me even more that the restrictions placed on incandescent lamps will not save enough energy, be worth the expense and the risks that every person in America will be subjected to.

Some of the most knowledgeable people I know have begun to stockpile a lifetime supply of incandescent lamps to protect themselves from the need to use compact fluorescent lamps. The public at large does not understand these problems as these professionals do. Further the misleading claims made about the benefits of the

lamp technologies that are touted as beneficial replacements seduce people to purchase these products.

We have over 100 years experience using incandescent lamps. By comparison we have very little experience using the new light sources especially in residences. You will hear a wide range of statistical data of energy saved in comparative terms, in comparative terms, that give the illusion of saving energy in the environment. The plain truth is according to the Energy Information Administration only 3.6 percent of total energy is consumed by incandescent lamps.

So you will save some portion of that miniscule number. But I ask when you enter everyone's home and subject them and their families to the potential list—the list of potential consequences that I will list is not worth it. I do not believe it is. I practice in those homes.

Consider the following.

One, lighting is not a product. It is a system designed for a purpose. This act separates one component of that system, the light source, and destroys the success of the final design.

Two, although lamp manufacturers are developing new sources to compete with the incandescent lamp if they are so superior they should be able to compete in the open marketplace where price will be a factor. Alternative lighting to the incandescent lamp will have to be worth the price differential.

The compact fluorescent lamp contains mercury. One gram of mercury will pollute a 2 acre pond. This 2007 light bulb standard brings a deadly poison into every residence in our Nation. The plastic lamp jacket warning is totally insufficient to protect the user. It is a cop-out to protect the manufacturer.

Five, we do not have enough knowledge of the potential consequences of being continuously exposed to the electromagnetic fields compact fluorescent lamps emit. There are millions of people in this country with Lupus, an auto-immune disease. Exposure to low doses of lights from these lamps causes a severe rash. There are over 100 auto-immune diseases.

Currently—6, currently you come home and your old fashioned incandescent lamp provide a safe, flattering, comfortable scene. You can easily dim these old lamps and the light they emit becomes even more inviting.

Seven, the compact fluorescent lamp does not dim well and the color of the light it emits deteriorates as you continue to dim it. You change the color of your furniture.

If you do not install these lamps in appropriate fixtures they might cause a fire. Save energy by incinerating part of your house.

Nine, the cost to retrofit your lighting to use these new light sources may be beyond the financial and technical capacity of most home owners.

Ten, this standard sends jobs to China.

I have a particular passion for saving energy. I was a member of the committee that wrote the first energy code for the USA in 1975. My contribution was the mathematical formula that set the upper power limit for lighting in that code. It was a performance based equation, not a product restricting simplistic equation. The Energy Information Administration noted by the year 2000 it cut

the energy used for lighting to pre-1970 levels. It cut to less than half the energy used for lighting by 1990.

The Energy Independence and Security Act of 2007 ignores the fundamentals of good lighting practice and intrudes on our ability to choose how we live. Please respect the privacy in our homes. Allow people their indispensable right to choose how they live and light their homes and eliminate the restrictions on the incandescent lamp.

Thank you. I look forward to answering any questions you may have.

[The prepared statement of Mr. Brandston follows:]

PREPARED STATEMENT OF HOWARD BRANDSTON, LIGHTING CONSULTANT,
HOLLOWVILLE, NY

Chairman Bingaman and Ranking Member Murkowski, thank you for inviting me to testify today in support of S. 395, The Better Use of Light Bulbs Act.

My name is Howard Brandston—I am a lighting designer with over 50 years experience and have completed nearly 3000 projects in approximately 60 countries. I am particularly proud of the work I did for my country, the United States of America. A short list that of that work you might recognize includes: The US Pavilion, Expo 70, Japan; Women's Rights National Historic Park, Seneca Falls, NY; Memorial for Women in Military Service, Arlington National Cemetery, Washington DC and the relighting of the Statue of Liberty, New York City, NY.

I am here today to ask that you revisit a portion of the Energy Independence and Security Act of 2007 that provides for a de facto ban on the traditional incandescent light bulbs. I firmly believe that the restrictions put on incandescent lamps will have a significant negative impact on almost every residence in our country. I believe how one lives in their home is a decision that rests with the occupant and is not the purview of the government. I believe this violates the very principles upon which this nation was founded and I, as a devoted citizen, am most proud of, our freedom of choice in our personal lives.

What disturbs me even more is that the restrictions placed on incandescent lamps will not save enough energy to be worth the expense and the risks that every person in America will be subjected to. Some of the most knowledgeable people I know have begun to stockpile a lifetime supply of incandescent lamps to protect themselves from the need to use Compact Fluorescent Lamps. The public at large does not understand the problems as these professionals do. And further, the misleading claims made about the benefits of the lamp technologies that are touted as beneficial replacements seduce people to purchase these products. We have over 100 years experience using incandescent lamps. By comparison we have very little experience using the new light sources—especially in residences.

You will hear a wide range of statistical data of energy saved in comparative terms that give the illusion of saving energy and the environment—the plain truth is—according to the Energy Information Administration—only 3.6% of total energy is consumed by incandescent lamps. So you will save some portion of that miniscule number. But I ask, when you enter everyone's home, and subject them and their families to the list of potential consequences I will list, is that worth it? I do not believe it is.

Consider the following:

- Lighting is not a product—it is a system designed for a purpose. This act separates one component of that system, the light source, and that destroys the success of the final design.
- Although lamp manufacturers are developing new sources to compete with the incandescent lamp, if they are so superior they should be able to compete in the open marketplace where price will be a factor. Alternative lighting to the incandescent lamp will have to be worth price differential.
- The Compact Fluorescent Lamp contains mercury. This 2007 light bulb standard brings a deadly poison into every residence in our nation. The plastic lamp jacket warning is totally insufficient to protect the user. It is a cop-out to protect the manufacturer.
- We do not have enough knowledge of the potential consequences of being continuously exposed to the electromagnetic fields Compact Fluorescent Lamps emit. There are millions of people with Lupus, an auto-immune disease. Expo-

sure to low doses of light from these lamps causes a severe rash. There are over one hundred auto immune diseases.

- Currently you come home and your old fashioned incandescent lamps provide a safe, flattering comfortable scene. You can easily dim these old lamps and the light they emit becomes even more inviting.
- The compact fluorescent lamp does not dim well and the color of the light it emits deteriorates as you continue to dim it.
- If you do not install these lamps in appropriate fixtures they might cause a fire. Save energy by incinerating part of your home.
- The cost to retrofit your lighting to use the new light sources may be beyond the financial and technical capacity of most home owners.
- This standard sends lamp-manufacturing jobs to China.

I have a particular passion for saving energy—I was a member of the committee that wrote the first energy code for the USA in 1975. My contribution was the mathematical formula that set the upper power limit for lighting in that code. It was a performance based equation—not a product restricting simplistic solution. The Energy Information Administration noted that by the year 2000 it cut the energy used for lighting to pre-1970 levels. It cut in less than half the energy used for lighting by 1990.

The Energy Independence and Security Act of 2007 ignores the fundamentals of good lighting practice and intrudes on our ability to choose how we live. Please respect the privacy of our homes, allow people their indispensable right to choose how they live and light their homes and eliminate the restrictions on the incandescent lamp.

Thank You. I look forward to answering any questions you may have.

The CHAIRMAN. Thank you very much.

Senator Risch, we have already had a chance to ask questions of the first panel. We're now to the second panel. Did you want to start off the questioning here of the second panel?

Senator RISCH. I will, but I probably shouldn't.

The CHAIRMAN. You can if you'd like.

Senator RISCH. You know, I wasn't here in 2007 when they passed this. But, you know, this is absolutely ludicrous. Mr. Brandston, you and I come from a different era, I guess.

You know you look at the eagle of the United States. They wanted in my home to take over my health care. I mean, people in Idaho are just astonished that the Federal Government is telling them what kind of light bulbs they've got to put home. I mean, you know, where's this country gone? It's just—it's absolutely amazing.

To me when I got here and I heard about this law and by the way this law was not well vetted out in public when it was passed in 2007. But when I heard that they were going to mandate. That they were going to put these mercury bulbs in every home in America, in every school, in every hospital and everything else. Has anybody looked at the EPA recommendations put out January 25, 2011, as to what you do if one of these mercury light bulbs break in your home?

I mean, in Idaho we've had a number of instances where they've had a mercury spill in a science laboratory or something in the laboratory in the school. They immediately close the school down for, I don't know, a number of days while they clean it up. Can you imagine mercury bulbs throughout a school?

I mean, any time a kid wants a day off he's going to break a mercury light bulb. That's going to shut that school down. If they don't they're going to have trouble with the EPA according to what has to happen to clean it up.

So, in any event I think—you know, Dr. Cooper, I heard you use the term—I forgot the exact term you used, anomalies in the marketplace or something. What was the term you used on?

Dr. COOPER. Imperfections.

Senator RISCH. Imperfections, yes. Whenever I hear about imperfections in the marketplace I hate hearing that because I'm a free market guy, an open market guy. But the only thing that troubles me more than imperfections in the marketplace is the government trying to fix it because I guarantee you that is not going to happen.

In any event those are all the questions I have. Thank you, Mr. Chairman.

The CHAIRMAN. That's an interesting set of questions.

[Laughter.]

The CHAIRMAN. Let me ask a couple of questions.

I think there's a basic confusion here. I think some of the witnesses have tried to clarify it. But the law that was passed in 2007 does not mandate the use of compact fluorescent light bulbs. At least that's my understanding.

It does not require that. It sets minimum efficiency standards for lighting. Then it leaves it up to the manufacturers to determine what technology to use.

In fact I thought I heard a couple of witnesses here describing incandescent light bulbs that met the standard. That were available for purchase. Mr. Pitsor, maybe you could respond and tell me if I'm right or if I'm wrong about my understanding.

Mr. PITSOR. Thank you, Mr. Chairman. The EISA 2007 provisions again, do not mandate CFLs. They do not ban incandescent light technologies.

As you describe the standards set a performance requirement that for a given amount of light output from a bulb. There's a maximum wattage that that bulb can consume to produce that light. So instead of 100 watts being used to produce the brightness of 1600 lumens we now have advanced incandescent technologies that produce that same amount of light using only 72 watts, meaning 28 percent fewer watts, meaning a 28 percent reduction in the cost of that bulb to the consumer in terms of their light—their energy bill.

So there's an incandescent technology that's available today. It's available from 3 manufacturers today and more coming that are on sale in California because as mentioned earlier California adopted these same Federal standards 1 year earlier that was provided for in the legislation. Those bulbs are now available for sale in California. Will be available nationwide starting January 2012.

The CHAIRMAN. Yes, Dr. Cooper, did you have a comment on that?

Mr. COOPER. I'm sitting here and there's a certain sense in which this kind of performance standard, technology neutral and pro competitive is the perfect example of how you do this right. I'm sitting here with 4 or 5 different approaches to light bulbs by every manufacturer who are going to get out there and compete. If dim ability is so important than that incandescent which meets the standard will win in the marketplace. This statute has not done anything to tilt that playing field.

At the same time the question of why we should dare to think about establishing a minimum performance standard is there's a fundamental, philosophical difference, no doubt. Some people think we never should have put seat belts in cars. When private behavior kills people this society has had the good sense to say we're going to take some behaviors and move them out of the marketplace. There's a different philosophy here.

Every person who is alive today because we adopted a seat belt law or an air bag standard speaks to the value and the correctness of making these kinds of decisions. But do it right. I'm a firm believer in the marketplace. But where there are places the marketplace won't solve it, you do it right and you get this. In a few years all of these complaints will disappear exactly because we unleashed this competition.

The CHAIRMAN. OK.

Mr. Brandston.

Mr. BRANDSTON. Lighting is a little more complex than that, unfortunately. This is a very simplistic approach. Certainly the product standards, I'm all for things like that. But lighting is a system.

When you look at the amount of money that's been advertising pushing compact fluorescent lamps today, we're pushing danger in our homes. We're pushing illness. We're pushing potential fires, etcetera, because that is the main thrust technology that people are focusing on.

The new high performance incandescent lamps which are—which have not really been examined in total. I'm a person who put hundreds of millions of sockets out there, right? I put millions of dollars worth of lights in buildings, homes across the world. These lamps may not work in those fixtures.

I've got millions of sockets out there. The light center length of these may not—and the basic ratio of the scale of the lamp, may not work. So you're going to ask all these places to refit their lighting. The energy cost of refitting that lighting is a technological mess.

So if we let the marketplace just do its job when new projects come along we won't be specifying standard incandescent lamps. We will be specifying the new products with the fixtures that are made to use them. We won't be putting hazards everywhere else when people try and retrofit some of these things into improper fixtures and ones that won't give the right light distribution.

If you notice the light center length is perfect. The light fixture doesn't work. So it's a system.

We have to respect that system. What this standard does is ignores it totally. It focuses on one third of the components of the lighting system. That is why it should be withdrawn and let the marketplace do it. Let—believe me the professional designers will not be specifying the old lamps.

The CHAIRMAN. Let me just ask—I mean, my understanding is if the new products that are being manufactured in accordance with these standards don't work they're not going to be—consumers aren't going to be buying them in any great numbers. I assume that there's a self interest on the part of the manufacturers in putting products on the market that actually work. Am I missing something here?

Mr. Pitsor.

Mr. PITSOR. Mr. Chairman, when the bill was passed in 2007 it provided a phase in period for that exactly for the reason you indicated in terms of making sure that the manufacturers undertook the investment and the testing of these products and the qualification of these products to make—to meet safety standards and performance standards and to ensure that interchangeability. These are the same basis. They're the same shape. They fit in the same sockets, in the same fixtures as today's incandescent bulb.

So there's interchangeability to ensure consumers have choices. Ensure that consumers have good products. That's all what the manufacturer has been focused on over the last 3 years.

The CHAIRMAN. I'll just make the other point that I think should be obvious. There's nothing retroactive about any of this legislation. I mean, this is—

Mr. PITSOR. Right.

The CHAIRMAN. In the future we're trying to specify the minimum standards that we want products to meet if they're going to be sold in the marketplace. But there's nothing retroactive that puts the pressure on a consumer to retrofit or change out or anything else.

Senator RISCH. Mr. Chairman.

The CHAIRMAN. Senator Risch.

Senator RISCH. Mr. Pitsor, what's the cost of the one in your right hand and what's the cost of the one in your left hand?

Mr. PITSOR. The 100 watt today runs about 25 to 50 cents initial cost. Then operating it over its life times, you know, 12 or 13 cents per kilowatt hour over its life at 100 watts. Probably operating cost is probably \$11 for its life.

The new incandescent advanced halogen product costs about a \$1.50 to \$2. They're just coming onto the market, so initial price is somewhat higher. But over its life you're saving 28 percent in wattage, 72 watts or 70 watts. So the cost over life is about \$8.

So you're saving about \$3 that you get to keep in your pocket times every socket you have in your home when you do this conversion.

Senator RISCH. I gather you're the frame of mind that the American people aren't smart enough to figure this out in the marketplace?

Mr. PITSOR. Part of the information is—well part of the challenge is providing consumer information on those choices. That's part of the transition as well. The new lamp label is going to provide the information on the total operating cost of these new bulbs.

Senator RISCH. I don't disagree with that at all. But I guess a free people should be able to make that decision without the government saying you will put this kind of a bulb in your home. You can't sell the other kind.

I guess we just have a basic philosophical difference on that. Is that—would that be a fair statement?

Mr. PITSOR. We've seen, you know, over the last and mentioned in earlier testimony, the last 4 or 5 years consumers increasingly moving toward more energy efficient products.

Senator RISCH. More power to them.

Mr. PITSOR. This will further accelerate that move in terms of providing them more money they can keep in their pocket because they're very conscious about energy costs.

Senator RISCH. OK. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Murkowski.

Senator MURKOWSKI. Thank you. It's interesting listening to the discussions going back and forth and whether or not we have choice in what we put in our home. You've held up a couple different choices. Clearly cost is a factor. As families look to their purchasing decisions, that is something that is out there.

I was just sitting here thinking, what has been taken off the market in my adult life that I really liked, that I now don't have a choice to buy. I'm going to date myself here, but I really liked the eight track cassettes.

[Laughter.]

Senator MURKOWSKI. I can't buy them anymore. Does that mean that I have been denied the choice?

Senator RISCH. Madame Chairman, I would not that the Federal Government did not outlaw eight track cassettes.

Senator MURKOWSKI. They did not outlaw it. But Dr. Cooper, you have used an interesting analogy there with the standards that we have put in our vehicles. I think you probably can't purchase a vehicle today that doesn't have safety belts in it. Do we say that our choice is restricted or limited?

These are different issues. But I think it's been a good discussion about what we have in play here. I want to ask the question though because there have been some good points that have been raised about the CFLs.

I started off by saying that it buzzes and it flickers. I'm not so keen on the quality of the lighting. Mr. Brandston pointed that out as well.

Several others have mentioned the mercury issue. But I would agree with some of the comments that the chairman has made as well: as the consumer is a more educated consumer, we make those decisions in terms of what it is that we want in our home. Whether it's the CFLs or the new incandescent. Mr. Pitsor, to you or to anybody else that wants to comment to this: what is the fate of the CFLs? Do they go by the wayside here?

Mr. Pitsor then Mr. Brandston.

Mr. PITSOR. You're right. Today's CFLs are probably the choice, the energy efficient choice that people are aware of. With the new incandescent halogens they'll become more aware of these products if they like incandescent technologies. Then down the road and what the industry is heavily investing in is the new LED bulbs.

This is a paradigm shift in terms of lighting technology that's a solid state type product. Very long lives, 25,000 hour life, producing high quality light. I think this is where we're seeing the investment taking place and the job growth is taking place in these new advanced technologies rather than CFLs.

Senator MURKOWSKI. Mr. Brandston and then Mr. Nadel.

Mr. BRANDSTON. I think it's important to understand that all the statistics you're hearing do not come from practice. I made one of those decisions, you know, I live in a yes, dear, whatever you say, dear world. I put a large addition on my house thanks to my wife.

But when I did it's all lighted with standard incandescent lamps, the lamp of choice for the moment.

We've been tracking that. In the 14 years that that addition has been used, we've replaced 5 lamps. So in practical household use this 25 to 50 cent lamp has lasted me approximately 14 years, not how many hours the laboratory set up is.

I work in a very practical world of designing. My whole focus is to please my client. I do not put things in their home that is not going to work.

When we look at the future of LEDs we have not yet discovered all of the ramifications of that. The French have found that the output of these lamps is harming the vision of young children. Why don't we do any epidemiology studies on that?

They contain arsenic and other poisonous materials. Why aren't we looking at that? Why don't we know that when you throw one of those CFLs in the trash the mercury changes to methyl mercury which is a deadly poison which if it gets into our water supply will be a danger?

Why don't we know all of this? Why haven't we done that? There's nothing conclusive on this.

So I, as an interested party, did a 57 page paper on the things, no conclusive proof, but that show that you need to do some research. This act was done in good faith by people wishing to save energy, wishing to worry about the environment. But losing sight of all the implications, the ramifications of what they were doing. We need time to do that.

We, as I said in my talk, we have over 100 years experience with these very safe incandescent lamps. We do not have any experience with—we have a limited experience with these new technologies.

Senator MURKOWSKI. Mr. Nadel.

Mr. BRANDSTON. I think we should pass this S. 395.

Senator MURKOWSKI. Thank you, Mr. Brandston.

Mr. Nadel.

Mr. NADEL. Yes, I wanted to add a couple of points to this discussion. First there's been some discussion about the CFLs. I believe that there's over one billion of these in use around the world. So we do have a fair amount of experience.

There's also the new incandescent bulbs we just talked about. In addition to the U.S. about a dozen countries also have similar types of laws several of which have already gone into effect. We're getting major experience in the tens of millions if not hundreds of millions of sockets.

That's in the European Union and Australia and Brazil and Argentina as well as California. They're already in effect. So we do have a lot of experience with, you know. If the rule was you can't do anything unless you have 100 years experience, you wouldn't do very much.

I wanted to make 2 other points.

In terms of consumer choice. If we let consumers use the inefficient bulbs that means electricity use would rise more rapidly than it otherwise would. We'd need more power plants. New power plants, they've really gone up in price lately due to materials have gone up. Labor has gone up. That would raise electric rates more than they otherwise would.

So it's not just a question of whether one consumer uses it. But if everybody uses it my power bills go up even if I don't use these less efficient lights. Likewise with air pollution, the extra power results in extra air pollution, you know, sulfur, nitrogen, oxides.

The third point I'd make is actually the biggest source of mercury in our environment, human caused mercury is from power production. If you use conventional incandescent lamp, I believe EPA found that you would emit 5.5 grams of mercury into the atmosphere that then goes into the waters, can go into fish. We ingest it.

With the CFL, and this is EPA data, there's only 1.6 milligrams of mercury that goes into the environment. Most of that has to do with even a CFL results in some power production. There's, I think, 0.4 milligrams of mercury EPA found typically goes into the environment from the bulb itself.

So it's not one has mercury, one doesn't. They both have mercury. Frankly the incandescent has more.

Senator MURKOWSKI. Thank you, Mr. Chairman. Thank you to the witnesses.

The CHAIRMAN. I thank the witnesses. I think we've had a useful hearing here. We appreciate you all testifying and presenting us with your expert advice.

Thank you.

That will conclude our hearing.

[Whereupon, at 11:21 a.m., the hearing was adjourned.]

APPENDIXES

APPENDIX I

Responses to Additional Questions

HOWARD M. BRANDSTON,
Hollowville, NY, March 29, 2011.

CHAIRMAN BINGAMAN, SENATOR MURKOWSKI ET. AL.

Again thank you for the opportunity to testify on S395. I believe that this bill, if passed, without question will be of significant benefit to every person living in the United States of America.

When I saw the list of people who would testify, I quietly said to myself, Howard, you should be proud as you are the only person to testify who has paid his own way to appear here today and that does not represent a group that has a significant vested interest.

You would expect that energy advocates and lighting manufacturers would oppose S 395. The energy advocates support any legislative or regulatory requirement that would reduce energy use, putting aside every other feature regarding quality, performance, and importantly, economics, as they have done here. The manufacturers support legislative and regulatory requirements that dictate that consumers must purchase lamps they would never buy if they were given freedom of choice. This new 2007 Act might even require the relighting of everyone's home, including replacing all the dimmers they may have installed. Now they have no choice. It would be a true test if every congressman tried living in their homes with no incandescent light bulbs.

What was presented in all the testimony, other than mine, is such a barrage of statistical data that it becomes meaningless. What continues to resonate very loudly, however, is the zealous nature with which they are steamrolling this issue and what they sidestep. Their message is delivered with a vehemence that is overplayed and worthy of pause and suspicion. Mercury is the issue that resonates on the street, and yet mercury is what the testifiers seemingly try to suppress. Other technologies, such as the so-called "high performance" incandescent are on the way and will naturally find their rightful place. Why then, the urgent rush to forcefully "get rid" (as per Cooper) of perfectly rational and useful products, to limit choice, promote personal peril and a host of other unknowns.

In the entire prepared testimony only one single paragraph by Steven Nadel addressed the mercury in CFLs. NEMA's "5Ls of Lighting" brochure states, "The bulb contains a small amount of mercury. Recycling is recommended." That is all NEMA had to say. Those who did bring mercury under scrutiny were the senators, particularly James E. Risch and Co-chairperson Murkowski. But then the issue is dropped.

As in "The Silver Blaze," where Sherlock Holmes solved the crime by noticing that the dog did not bark, I would consider the absence of all discourse on mercury irresponsible, highly suspect and key to the argument.

While the numerical data put forth on this issue to enlighten, inform and otherwise aid in the considerations leading to best practices, there are so many numbers and they have been used as indiscriminate weapons in defending a position. There is little context and no sense of proportion. Most everything is projected and monetary impact is rendered subjective. For example, Kathleen Hogan's testimony includes the following:

DOE projects that if S 395 were enacted, US primary energy consumption would increase 21 quads and greenhouse gas emissions could increase by more than 330 million metric tons over the next 30 years.

“Primary energy consumption” is based at the generating source. According to the DOE all this carbon tonnage can be avoided. Upon examination of that statement in combination with DOE figures utilized by the US Energy Information Administration, 21 quads of energy accumulated over 30 years amount to an increase of 0.018% in energy use for the US over the same time period. Hogan’s figure of “21 quads” includes metal halide fixtures. Removing these yields an accumulated 15 quads. For general service and reflector incandescent lamps, the Bulb act would then contribute 0.013 % to US energy use over the next three decades. That has the same impact over 30 years as saving \$1.44 a month out of a budget of \$4000.00 per month.

Startling, yes? Lifting the hood on this reveals something so convoluted that we do not know whether the numbers are correct or at all meaningful. Even if I am off by a magnitude in the above, the contribution of incandescent is trivial, even less so over the long haul. And this is only one example worthy of further examination.

Additionally, the Hogan testimony states,

Energy saving options from efficient incandescent bulbs to CFLs to LEDs can be found on the warm side of the spectrum, providing the same light as less-efficient bulbs.

We know this to be patently false. The spectral output of CFLs and LEDs is not the same as the general service incandescent. And there is no mention across the hearing that, owing to the suppression of the halogen cycle, the lifetime of halogen lamps can be reduced if they are dimmed for long periods of time.

Further, the Maxwell School at Syracuse University claims that, among other factors, consumption is weighed more toward the price of energy than on available technology. Consumers attenuate their use based on how much they have to pay up front, and hypersensitivity to long term savings is a dream of academics and a useful concept wielded by bureaucrats.

Layer by layer, these governmental agencies and lobbying groups have built a bee’s nest of information. My point here is that there is plenty of “evidence” that standards can save some energy, but very little straightforward truth as to the magnitude of practical impact, and end results of such standardization. In fact, the results cannot be definitely known.

The fact-ridden information provided by the Consumer Federation of America (CFA) is a generic send-up of efficiency standards of all types, perhaps retro-fitted to serve as a quick defense against the passing of S 395. The prepared testimony of Mark Cooper does not include one instance of the words “incandescent” or “lamp.” In fact, their “market imperfection” data was prepared for a proceeding on motor fuel, not lighting. “Lighting” is mentioned, but only in terms of the source type, as just another toilet or dishwasher to be regulated. Please refer to the hearing commentary of senator Paul Rand on S 398.

Cooper began his verbal testimony stating that, “Energy efficiency standards are consumer-friendly,” and that, “The homes in which consumers live will command higher resale because they are more energy efficient.” He continued with, “Efficiency standards enjoy widespread public support. Our opinion polls suggest that 95% of all Americans think it’s beneficial to lower their consumption; they know it’s better for their pocketbooks, and almost 3/4 support efficiency standards.” However, their impression rests solely upon what survey subjects thought, not what they did. Subjects were asked questions of type. . .

- Do you think it is beneficial..?
- In your view, how important is each of the following ..?
- If energy efficiency increased price but reduced the cost of use, would you favor ..?
- Are you aware the standards ..?
- In principle, do you support or oppose ..?
- Do you feel the sum of the benefits ..?

Dr. Janice Funk, Harvard lecturer and neuropsychologist of Whittier Rehabilitation Hospital in Bradford, MA, tells me that there is repeatedly a wide discrepancy. Psychologists tell us there is wide discrepancy between what people say and what they do. As example, I have spoken with many current employees of the government, and with all the information at their fingertips, being intimately familiar with the issues and needs of this energy economy, most still do not buy CFLs. When faced with the choice in the aisle of their hardware store, they want three things:

1. they want to pay less
2. they want a light that’s bright when they flip the switch, with no warm up

3. they want a light that doesn't make things look odd

Though consumers will say they believe in energy efficiency, they will admit they purchase what they want at the moment of decision, and they want to pay less every time. Even though they are familiar with the promise of long-term savings, I have heard that what really matters most to them is the current moment and what their family will tolerate. Even though testimony repeatedly tries to personify the data with the demeaning term, “pocketbook,” humans are not motivated by long-term promises.

Cooper goes on to say, “Our analysis of the energy efficiency gap identifies a number of market imperfections that cause the market to undersupply energy efficiency. . . Standards are the ideal way to address these market imperfections.”

Senator James E. Risch rejoined, “People in Idaho are just going nuts and they are astonished that the federal government is telling them what kind of light bulbs they have to put in their home. Where’s this country gone? Dr. Cooper, what was the term you used? Cooper: Imperfections. Imperfections, that’s right. Whenever I hear about ‘imperfections in the marketplace,’ I hate hearing that because I’m a free market guy, an open market guy. But the only thing that troubles me more is the government trying to fix it. I guarantee you, that is not gonna happen.”

In concluding, Cooper essentially stated, “So, if you look at the marketplace and you see products that harm consumers . . . you can get rid of them by a performance standard that is neutral.”

- Is it “neutral” to flatly “get rid” of a product that works perfectly?
- Why does supplying one product imply the forced obsolescence of another?
- Would it not be a “market failure” to, in turn, under-supply the low-cost and safer lamp that consumers know?
- Ultimately, is it valid to use motor fuel data to propel the wholesale removal of a simple and safe product from the market of choice?

The numbers are just that—numbers. And the plethora of numbers from all arenas (motor fuel data?) are being used to drive the words here, all funneling down to the emotive, “empower consumers,” “lighting choices,” and the abasing phrase “money in pocket.”

The DOE is seeking to provide “regulatory certainty” for industry on the backs of the consumers they will sacrifice. It is a classic example of agenda-setting in the guise of stewardship.

- Senator James E. Risch went on, “To me, when I got here and heard about this law—and by the way, this law was not very well vetted out in the public—that they were going to put these mercury bulbs in every home, in every school in America, in hospitals . . . has anybody looked at the EPA recommendations put out January 11, 2011 as to what you should do if one of these mercury light bulbs breaks in your home?”

Cooper said, “Public opinion polls show that 70 percent or more of the public wants the government to do as much or more with respect to distracted driving, food safety, fuel economy, privacy, oil drilling, the environment, and financial services, as well as energy efficiency.”

And he is right. This is what the government has always done . . . except, in the case of the CFL, which is (counter to all their arguments) being promoted as the replacement to the general purpose incandescent. Regardless of the technology on the horizon, this is the technology of the moment. LEDs are too expensive, OLEDs do not exist and high-performance halogen will probably be out of the financial reach for people lighting an entire home. The CFL has its place, but it should not exclude the healthy choice.

The difference between lighting and other appliances subject to regulation is that we did not evolve with dishwashers, battery chargers and set-top cable TV boxes. As the progeny of this planet, we evolved under sunlight, moonlight and alongside the incandescence of fire. As a species we are exquisitely tuned to light’s qualities and rhythms on physical and neurological bases. From a cellular level upward, the light that envelops us steers our very existence, and to impose limitations upon how we choose to illuminate our personal environment carries biological ramifications that reach far deeper than the effects of a longer defrost cycle. Likewise, we did not evolve with mercury, which, in unnatural concentrations, frays our nervous system and attacks our brains as does Alzheimer’s disease.

If it is truly in the national interest to really reduce national energy use, there are ways to accomplish much better results by passing legislation regulating the energy use for heating, ventilating, and air conditioning (HVAC) and water heating systems. These systems use far more energy than lighting in both residential and

commercial buildings. Pass a law requiring the use of ground source (sometimes called geothermal) heating and cooling systems and thus eliminating “conventional” HVAC systems. These systems can be used in most, if not all buildings. This can be done by simply legislating and raising minimum energy performance for all HVAC systems, both new and replacement, such that all “conventional” systems now regulated by DOE can no longer comply. This is exactly the same approach used with lighting efficiency. However, the energy saved will be significant. For lighting the savings will be miniscule. The technology for HVAC is mature and reliable.

Another measure is to pass legislation regulating the energy use for water heating systems. Pass a law requiring the use of heat pump water heaters and thus eliminating “conventional” water heating systems. This can be done by legislating and raising minimum energy performance for all water heating systems, both new and replacement, such that all “conventional” systems now regulated by DOE can no longer comply. These systems can be used in most, if not all new and existing buildings. This is exactly the same approach used with lighting efficiency. The technology is mature and reliable. Except the energy saved will be significant.

These two measures would quickly save untold amounts of energy, and require little more government effort than already exists.

The Energy Information Administration Estimates that 3.6% of energy is used for incandescent lamps. All the figures that were used in testimony were carefully crafted using only partial data to make the case for new technology look attractive. In fact, it is not.

While current law de facto requires the use mainly of CFLs, you and the public should be aware that the energy and pollution “savings” are not nearly as much as being claimed. In fact, the energy used to manufacture these new products, their plastic packaging and shipping costs from China have never entered their equations. In some cases energy is wasted. Yet the opponents of S 395 never mention this, which is a scientific and engineering fact.

In winter months, 44% of commercial buildings and 47% of residential buildings use electricity as the primary or secondary form of heating energy. In those buildings, the lesser amount of energy used by CFLs compared with incandescent lamps is replaced with electric heat, so there is little or no electricity, energy, or cost savings for the consumer. Yet the utility is required to now supply about 125% of the volt amps that were formerly used due to the low power factor of CFLs, which results in 25% more pollution from utility power plants than with incandescent lamps.

No mention was made of the potential health and fire hazards use of CFLs might be responsible for. Evidence is piling up daily from around the world that problems may exist. It is too early for conclusive numbers but is it worth the risk? Millions of people are stricken with Lupus and other autoimmune diseases. Many of these people are suffering from rashes, some quite severe. We may be promoting a product (the CFL) that is energy wasteful and simultaneously toxic. Is this worth the risk? Are we going to roll the dice and hope for the best in this quest to save some small amount of energy?

If everyone is given the choice in how to light their homes the risks disappear. People will buy the products that best serve their needs, that are not a financial burden to them, and there will be no impact on the energy saved in this country.

RESPONSES OF HOWARD M. BRANDSTON TO QUESTIONS FROM SENATOR BINGAMAN

Chairman Bingaman Mr. Brandston, in your testimony you state that the EISA 2007 “provides for a de facto ban on the traditional incandescent light bulb.” There are energy-efficient incandescent bulbs available that meet the standard and they are virtually indistinguishable from the traditional incandescent bulb.

Question 1. Why can’t consumers who prefer incandescent bulbs, purchase the new more-efficient incandescent bulbs?

Answer. The new “more efficient” bulbs cost significantly more than the standard bulbs. In many households this would be a hardship. The calculated savings projected over time would not be worth the immediate outlay of scarce dollars. Further the new sources will not work in many existing lighting fixtures—this could be a hazard and a waste of energy.

Question 1a. If the BULB Act were to be enacted, then the Federal standards on incandescent bulbs would not come into effect. However, under the 10th Amendment of the Constitution, California would continue to have its standards and every other State would have the right to adopt energy efficiency standards for light bulbs.

Answer. That is true. But if the rationale for passing S395 were properly publicized, the educated electorate and local legislators would amend their codes to closely reflect the Federal example if it was properly written.

Question 2. Do you agree that it is less burdensome to business and the economy to have a single Federal standard rather than multiple state standards?

Answer. I am not sure about that. I think this is a constitutional question on state's rights. There are many local building codes that meet the needs of the location and, to my knowledge, have not hampered business or trade.

Question 3. Over three years ago Congress passed and President Bush signed EISA establishing the incandescent lamp standards with a starting date of January 1, 2012 for the 100 watt bulb. As a result, U.S. bulb manufacturers have made substantial investments to meet the new standards.

Do you think it is fair to U.S. businesses to repeal a standard after they have made substantial investments to comply with that law?

Answer. I believe that most lamp companies are always doing research and investing in new products to gain some market advantage. I know of several products that were developed that did not sell and they were written off as market research gone wrong. This de-facto ban is a marvelous bit of marketing for those companies—they had a product that wasn't selling as well as anticipated—now the government is banning the favored product.

RESPONSES OF HOWARD M. BRANDSTON TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. As I understand it—Two separate Government entities are working on the standard—the legislators are generally setting a goal, the regulators are setting a means of implementing that goal. When a Standard is developed by the Voluntary Standards Development Community it passes through a public review which does not bear the burden of meeting legislation, the only burden is to prove the standard serves the public at large.

Question 2. How was consensus achieved on the proposed standards and how do you define "consensus" in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. From my point of view—there was no consensus—this was a dictatorial process.

Question 3. In your testimony you spoke of the negative attributes of CFLs. Do you have any opinions on the other technologies discussed at the hearing?

Answer. The only other technology that I have concerns about are LEDs (Light Emitting Diodes). They contain many components that are considered dangerous and have not had sufficient time to be tested in many applications. In lighting, for the most part, there are no bad products—just bad applications. The LED industry at first totally misrepresented their products. That should give most of us a cause for concern. A recent French research study states these products may have a damaging effect on infant's eyesight. More work has to be done on this before we put these light sources in every home.

I have grave concern that there has not been any effort to alert or educate the public of any of the application negatives that have been piling up swiftly. The only effort expended so far has been to promote what I consider to be a toxic product that in truth does not save the energy.

Question 4. How would the proposed new standards have impacted the various lighting work you have done over the course of your career?

Answer. I cannot begin to estimate the harm that these new proposed standards would have done to my work. Many of my projects would not have been able to meet the needs of my clients. If you cannot provide what is necessary for a project to be successful you have indeed wasted energy and all the money invested. I have been fortunate to have been given about 3000 lighting design commissions in 60 countries. They would not have been able to receive the recognition they achieved under the new standards.

I was fortunate to have started my career in the theater. There were no codes or standards for lighting in the theater. It just had to work. That simple dictum was amply illustrated on the relighting we did for The Statue of Liberty. It worked.

RESPONSES OF HOWARD M. BRANDSTON TO QUESTIONS FROM SENATOR PORTMAN

Question 1. I think one of the largest barriers to wide-spread deployment of energy efficiency technologies on both the industrial/commercial side and the residential side is education. As a consumer it is pretty difficult with the tools available to us today to wrap your head around how much energy you use in a day or a year,

and then it is even tougher to figure out how much a certain energy efficiency technology can eventually save you. I believe this uncertainty makes it hard for a consumer to commit to investing the upfront money in energy efficiency technology, and I think it is one of the reasons why so many get concerned when governments talk about mandates on energy efficiency. Simply put, the uncertainty leaves a lot of money on the sidelines. Do you agree? If so, what is the solution?

Answer. Dissemination of truthful information and education is the key. The testimony given today was a good example of how data can be spun to create an impression of doing good while indeed that has not been the case. Some of that spin was mandated by the energy policy we now have in place. As people invest, based on this manipulated data, they find it has misled them—that sets up barriers to further investment—so who do you trust? If a family member suffers from a light induced ailment—what does that uninformed consumer do?

We must have an education policy to accompany whatever technical strides we would like to achieve. The well informed investor can sort out the rest.

Question 2. How do we develop metrics for consumers to base their decisions that is accurate across many different consumers, environments, and scenarios?

Answer. When developing metrics for the average consumer—these must be developed by those who work directly with that consumer group in creating their lighting. This cannot be properly achieved by fiat/mandate. A properly developed guideline will profit the user—all others will follow.

CENTRAL ISSUE

Historically, the government of the United States has advanced the quality of the American way of life by putting safety above cost. They mandated taking lead out of paint, even if that made the paint more expensive; they removed the asbestos from our buildings; put more life boats on ships, and so on, always knowing the safer product was, in the long run, the better product for people. Many times over, these improvements increased cost, but there was always the underlying principle that in this country, human life and health were worth more than money. Now, however, they would like to turn that assumption on its head and needlessly promote the introduction of mass amounts of a known toxin into the environment by removing the alternatives—products with a long history of safety and reliability—thereby, removing American's freedom of choice.

One could (rightly) argue that there have been many public awareness campaigns that have been highly effective, such as littering, forest fires, smoking, etc. Thus, claiming the average homeowner isn't going to consult the EPA to learn how to recycle and dispose of these lamps (even though they won't, as Risch says) will probably not gain much attention. From Senator Risch, above, “. . .this law was not very well vetted out in the public; they were going to put these mercury bulbs in every home, in every school in America, in hospitals. . .” My questions/comments to them would be:

- Do the proponents of EISA 2007 have the right to the right to force every American to become a Hazmat worker?
- How you can you sit on Capitol Hill, while somewhere a pregnant mother must clean up the mercury from a broken CFL in her nursery?
- You can power an incandescent lamp with a wind turbine or a solar panel. You can power a CFL or an LED with a coal-burning generator. But when the lifetime of each is over, it's the mercury-containing CFL that remains the bigger threat to the environment.

The above proponents have made jiggered attempts to personify their schemes through a juggernaut of numerical acrobatics, undemonstrated consumer behaviors and affable verbiage. But it all flies in the face of personal health and wellbeing, which really does strike sharply at the level of home and hearth. I would say that their points are now irrelevant. In the practical realm of things the urge to ban the general incandescent occupies very little in the way of priority in the current economic environment, even in context of the overall sphere of energy policy. And yet, proliferating the market with toxic, foreign-made “efficient” product poses surprisingly far-reaching implications. They do not know what they do.

The history of federal regulation, from Prohibition to Sarbanes-Oxley to ethanol, to farm subsidies, to land management, to immigration quotas, to the progressive personal income tax, intervention and is replete with examples of intervention and unanticipated consequences, some regrettable in retrospect. DDT was supposed to lower the cost of farming and increase productivity. I think we can easily see that once you introduce something into the environment, it can prove very difficult, or

impossible to remove. Truly, setting performance limits on the general incandescent could be the government's best idea since allowing DDT.

The search for efficiencies is a natural function of free markets and applies to this industry's relationship with consumers as surely as it does (and has) with all others. There are no imperfections. Free of bureaucratic micro-management of the choices available to light the kitchens of America, industry will continue to develop the lighting products that compete side by side in the marketplace, and in all respects the best will reign by dint of consumer choice. In the effort to demonstrate tangible progress toward a national energy policy, the DOE and others are committing regulatory interference, and putting into question the long-term health and safety of the nation's citizens and our environment. In response, the BULB Act should be passed.

RESPONSES OF STEVEN NADEL TO QUESTIONS FROM SENATOR BINGAMAN

Mr. Nadel, your summary says that consumer savings from appliance standards already in place will exceed 300 billion dollars by 2030, and that in 2010 these savings generated 340,000 net jobs in the U.S.

Question 1. Would you please outline the analysis which resulted in this job creation estimate?

Answer. To calculate the energy savings from standards, ACEEE used estimates of the energy savings from each more efficient product, annual product sales, average product life, and estimated market share of compliant products in the absence of standard. Estimates are based on DOE's rulemaking analyses where available, and other sources such as information from ENERGY STAR, appliance manufacturers, the U.S. Census Bureau, and utility energy efficiency evaluation reports. The benefits in dollars were calculated using Annual Energy Outlook 2010 prices. Costs for standards issued since 2005 and prospective standards were also compiled from prior ACEEE research¹. For standards completed before 2005, costs were estimated using payback periods found in DOE's Technical Support Documents.

This job creation estimate is based on analysis using an ACEEE Input-Output economic model, which uses Input-Output coefficients published by IMPLAN. In order to calculate the employment impacts from these standards, we calculated the energy bill savings that are generated from decreased (more efficient) energy use as a result of each appliance standard, and the costs imposed from each standard (incremental cost of more-efficient appliances). The Input-Output analysis looks at the impact of these costs and benefits on consumers, manufacturers, contractors, retailers, utilities and fuel producers. We report net impacts on employment, as jobs are created in some sectors (e.g. construction, retail and services) and lost in others (e.g. reduced demand for coal and natural gas). Additional information on our methodology and results can be found in the full project report, available at <http://aceee.org/research-report/a111>.

Question 2. Some argue that Federal regulation of appliance efficiency is inappropriate government intrusion in the marketplace. After 25 years of this program, what do you believe the impact of these regulations has been on your industry, on job creation, and on the U.S. economy?

Answer. As noted in your first question, a recent ACEEE analysis has found that as a result of federal efficiency standard enacted in the past 25 years, consumers will save more than \$300 million and more than 300,000 net jobs have been generated. We also found that efficiency standards increased total wages by about \$10 billion in 2010. Also, appliance standards have reduced U.S. energy use and peak electric demand. We estimate that in 2010, standards reduced electricity use by 291 TWh (7% of U.S. 2010 electricity use) and 3.58 quadrillion Btu's of total primary energy use (3.6% of U.S. 2010 total use). Efficiency standards also reduced peak electric demand by 78,000 MW, equivalent to the output of 260 power plants of 300 MW each. In addition to these macro economic effects, efficiency standards have helped to spur product innovation. As a result of standards manufacturers have "sharpened their pencils" and designed new high-efficiency products with modest costs. Examples include improved refrigerators, clothes washers (more efficient and clean better, as noted in my response to question 5), dishwashers, air conditioners (residential and commercial) and light bulbs.

¹Neubauer, Max et al. 2009. Ka-BOOM! The Power of Appliance Standards: Opportunities for New Federal Appliance and Equipment Standards. Washington, D.C.: American Council for an Energy Efficient Economy and Nadel, Steve, et al. 2006. Leading the Way: Continued Opportunities for New State Appliance and Equipment Efficiency Standards (updated from A051). Washington, D.C.: American Council for an Energy Efficient Economy

Question 3. Mr. Nadel, what do you believe the short-term and long-term impacts of enactment of the BULB Act would be nationally and in American households?

Answer. The short-term impact is that manufacturers would continue to produce conventional incandescent light bulbs to complement the more efficient incandescent bulbs they recently brought to market. Sales of the more efficient incandescent lamps would be lower than they had planned (many consumers will stick with the cheapest bulb, not realizing how quickly more efficient bulbs pay for themselves) and manufacturers will need to scale back plans to produce the new lamps. Some manufacturers may have stranded investments as a result. However, California and Nevada would enforce standards they enacted before the federal standard was enacted, and likely additional states would regulate bulbs (several were considering such regulations before the federal standards passed). This patchwork of state standards would present challenges to manufacturers, distributors and retailers. One of the main reasons for national standards is so we can have a national market for products such as light bulbs.

In addition, BULB would also repeal a variety of other sections in EISA, including provisions on reflector lamps (closing a loophole in the 1992 law that established reflector lamp standards), metal halide lamps (primarily used in factories, large commercial spaces, and outdoors), consumer information labels for televisions and other electronic products, and a program to improve lighting efficiency in federal facilities. Thus, BULB would reopen a major loophole in the 1992 reflector lamp standards. Before EISA was passed, on the order of half of incandescent reflector lamp products sold were taking advantage of this loophole. The 2007 metal halide lamp standards removed the least efficient products from the U.S. market, although these less efficient products are still sold in many other countries. Repeal would provide an opportunity for inexpensive less efficient products to be imported into the U.S. We have not seen or heard any criticisms of these other provisions, but still the BULB bill would repeal them.

In the medium-term, U.S. electricity use would be higher than is currently forecast as these standards have a significant impact on electricity use. In my testimony I noted that in 2007 when EISA was passed, ACEEE estimated that the provisions in Subtitle III B would by 2020:²

- Reduce annual electricity use by 73 billion kWh (enough to serve the annual electricity needs of 6.6 million average American households);
- Reduce peak electric demand by more than 10,000 MW (equivalent to the output of more than 30 power plants (300 MW each); and
- Reduce consumer energy bills by more than \$6 billion (about \$50 per American household annually).

These benefits would be lost if the BULB bill is enacted.

Also, the repeal of the lamp standards would likely make manufacturers reluctant to invest in new more efficient products if cheap incandescent lamps are still on the market. This would likely slow progress towards use of LED lighting in homes.

Question 4. Mr. Nadel, certain provisions that were in the bill last year had to be pulled out because the passage of time required renegotiation.

Would you briefly describe what provisions are being renegotiated and may be presented to the Committee as amendments in the coming weeks or months?

Answer. As noted in my testimony, we have renegotiated the provision on reflector incandescent lamps relative to last year's bill and ACEEE and NEMA have jointly recommended a revised provision. The changes are due to the fact that DOE is likely this year to complete the first rulemaking on these products called for in this bill and thus we revised this provision to only apply to subsequent rulemakings. In addition, the outdoor lighting provisions from last year's bill have been removed because the underlying Illuminating Engineering Society (IES) technical standard is being revised. When this new IES standard is published, we anticipate re-examining and modifying last year's provision. IES's schedule is unclear and therefore we do not know the timing of our renegotiation. Finally, we are discussing possible updates to electric motor standards with manufacturers. Congress enacted revised electric motor standards in EISA 2007 that established "premium-efficiency" levels for the most common products, somewhat lower "high-efficiency" levels for some less common products, and no standards for certain uncommon products. We are discussing whether additional product types should be subject to the "premium-efficiency" standards.

²ACEEE. 2007. "Energy Bill Savings Estimates as Passed by the Senate." <http://www.aceee.org/files/pdf/fact-sheet/EnergyBillSavings12-14.pdf>. Washington, DC: American Council for an Energy-Efficient Economy.

Question 5. Mr. Nadel, I assume that you have read the article in this Monday's New York Times entitled, "When Energy Efficiency Sullies the Environment"?

I'd appreciate your general views on the piece, and more specifically, your views on the author's contention that improved energy efficiency can result in greater pollution, a paradox known as the "rebound effect."³

Answer. Yes, I have read that article. I would point out this was an opinion piece meant to provoke and was not intended to be a balanced, factual article. The author got a number of facts wrong. For example, the author alleges that Consumer Reports found that new clothes washers do not clean well. He also says that the improved efficiency washers now on the market are expensive. But as Consumer Reports noted in two recent blog postings on their Web site:

Despite what gets printed in national newspapers, today's energy-efficient washers are able to clean clothes. Take our latest Ratings: a vast majority of top-loaders (76 out of 82 tested) scored "good," "very good" or "excellent," with only 6 scoring "fair" or "poor" on wash performance. Front-loading washers generally performed even better, and many of these washers were still relatively affordable, with several costing between \$550 and \$650.³

Tierney [the author of the NYT piece] also notes that back in 1996, Consumer Reports said "any [top-loading] washing machine will get clothes clean," whereas now, only some manage that feat. But that face-off compares apples to oranges: Our testing and scoring protocols for washers are significantly tougher than they were when Bill Clinton was in the White House.⁴

Turning to "rebound", there have been a number of recent articles claiming that savings from energy-efficiency improvements can be lost to increased use of efficient products and other factors. While in fact there likely some modest rebound effects, the allegations in the Tierney opinion piece in the NYT and other similar articles are greatly exaggerated. The allegations fall into four categories:

a. When consumers purchase efficient products, knowing the products are efficient, they use them more. This has been documented for several products (e.g. cars and CFL lightbulbs), but the effect is typically only 5-10% of the energy savings, leaving the other 90-95% as real savings.

b. When consumers and businesses save money due to energy-efficiency, they spend much of what they save on additional products and services (e.g. going out to eat more often) and these additional services use energy. This is true, but we see this as a positive impact (energy efficiency helps spur economic growth). Also, from work we and others have done, this might use on the order of 1/4 of the energy savings, not all of the savings.

c. As products grow more efficient, more consumers purchase them. For example, an article in The New Yorker a few months ago blamed energy-efficiency for the large growth in use of central air conditioners in homes. In fact, the growth in central air conditioner use is primarily due to rising household incomes and a dramatic decline in the price of central air conditioners.⁵

d. More efficient industrial processes generally have higher productivity and as a result, these processes are used to produce greater quantities of products. Yes, more efficient plants tend to operate more, but this is compensated by the fact that older, less-efficient plants are operated less. Overall, this factor is subsumed under item "b".

RESPONSES OF STEVEN NADEL TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. Can you explain what happens when, in the absence of a federal standard set by Congress or DOE, the states begin adopting their own standards, one by one?

Answer. Fourteen states have adopted standards in recent years.⁶ Sometimes states copy standards from other states, but frequently some modifications are made in response to local considerations. As a result, manufacturers and distributors must ship different products to different states, and must more carefully track legal requirements and which products go where, so they can be in compliance with state

³ <http://news.consumerreports.org/appliances/2011/03/forget-greenwashing-nowadays-its-all-about-greenbashing-.html>

⁴ <http://news.consumerreports.org/home/2011/03/consumer-reports-to-the-new-york-times-washers-are-greener-and-better-.html>

⁵ This is discussed in a recent ACEEE blog on this subject: <http://www.aceee.org/blog/2011/01/our-perspective-rebound-effect-it-true-more-efficient-pro>

⁶ See <http://www.standardsasap.org/state/index.htm> .

laws. Also, when state standards are set, in some cases consumers who live near a state border may shop out-of-state, creating dislocations for merchants. Also, states are generally cash-strapped and do an uneven job of enforcing standards. This can penalize honest manufacturers, distributors and retailers and provide undue advantage to less scrupulous companies. National standards eliminate all of these problems by creating a uniform national market—the same product can be shifted everywhere. Also, compliance with national standards tends to be better than for state standards.

Question 2. When has the market moved towards more efficient appliances without a federal or state mandate in place?

Answer. There are many cases where the market for efficient products has grown without standards, spurred by Energy Star, utility and state energy efficiency programs, manufacturer and retailer promotions, and other efforts. Examples include CFLs (now about 20% of screw-in bulb sales) and home appliances. Regarding home appliances, Energy Star estimates that in 2009, the Energy Star market share was 36% for room air conditioners, 48% for clothes washers, 68% for dishwashers, 35% for refrigerators and 2% for water heaters.⁷ In the case of refrigerated vending machines, in response to consumer and environmental group pressure, beverage manufacturers (e.g. Coke and Pepsi) asked manufacturers to design more efficient vending machines. But even in all of these cases, product efficiency standards complete the transformation of the market, converting the 1/3-2/3 of the market that does not respond to voluntary efforts. Over the very-long term, some products may turn over on their own (e.g. we no longer use whale oil lamps), but this process typically takes many decades. For example, Congress in 1992 asked DOE to set standards on mercury vapor lamps, a particularly inefficient type of outdoor lighting. These standards have not yet been set and while their market share has declined since 1992, they still have notable market share (e.g. 16.7% of outdoor lighting products in use according to a 2002 study for DOE)⁸.

Question 3. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. Appliance standards can be set through either a legislative or a regulatory process. The legislative process has only been used when there is consensus among the major parties (e.g. manufacturers, efficiency, consumer and environmental organizations, and utilities). When there is such consensus, and when energy legislation is moving forward, the legislative process is generally the quickest. In addition, legislative adoption allows creative solutions that may not be permitted under existing legislation. For example, INCAA contains some changes to how federal standards and state building codes interact; changes that require legislative action. Furthermore, with legislative adoption, the cost of a rulemaking can also be saved, including costs for federal employees and contractors as well as time spent by participating parties. Finally, since all parties sign off on the legislation, the details can be reviewed and refined by interested parties.

Regulations are commonly used when consensus cannot be reached on new standard levels. With regulation, the different parties can make their case and DOE makes a decision. Regulations can also be used when energy legislation is not moving through Congress, if the underlying legislation authorizes such regulations. With regulation, sometimes not all aspects of a consensus agreement may be adopted, either because of restrictions in the law, or because DOE chooses to take another path.

Question 4. How was consensus achieved on the proposed standards and how do you define “consensus” in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. For the various standards in INCAA, manufacturers and efficiency organizations would talk and decide if a consensus standard was worth pursuing. Specific proposals would be developed by one or both parties and through meetings and other discussions differences worked through until there was agreement on a full package. At times, some analysis proved useful, either prepared by one of the parties, or by DOE. For example, DOE provided many analyses for use by the parties during the negotiations for refrigerator and other appliance standards. Once agreement was reached among the principle parties, other parties would be consulted (e.g. utilities, retailers, contractors, and wholesalers), and if needed, some modifications worked out. In this context, “consensus” means that all parties support the agreement, and prefer the agreement to the alternatives (e.g. a DOE rulemaking or no federal action).

⁷ <http://www.energystar.gov/index.cfm?c=manuf—res.pt—appliances#asd>

⁸ Navigant Consulting, Inc. 2002. U.S. Lighting Market Characterization. Volume 1. Prepared for U.S. Department of Energy. Pg. 35.

In the case of the incandescent bulb standards, after many months of discussion, the various parties eventually agreed on most of the particulars. A few final details were decided by Members and their staff and all parties supported these final compromises.

RESPONSES OF STEVEN NADEL TO QUESTIONS FROM SENATOR PORTMAN

Question 1. I think one of the largest barriers to wide-spread deployment of energy efficiency technologies on both the industrial/commercial side and the residential side is education. As a consumer it is pretty difficult with the tools available to us today to wrap your head around how much energy you use in a day or a year, and then it is even tougher to figure out how much a certain energy efficiency technology can save eventually save you. I believe this uncertainty makes it hard for a consumer to commit to investing the upfront money in energy efficiency technology, and I think it is one of the reasons why so many get concerned when governments talk about mandates on energy efficiency. Simply put, the uncertainty leaves a lot of money on the sidelines. Do you agree? If so, what is the solution?

Answer. Yes, I agree that one of the major barriers is that many consumers (residential, commercial and industrial) do not realize the specific opportunities they have for saving energy, and how to achieve these savings. Faced with such uncertainty, they do not take action. In terms of solutions, I recommend improved labeling and education efforts. For example, appliances now carry an Energy Guide label, but focus groups ACEEE and others have conducted have found that many consumers do not understand the labels. In most other countries they use labels in which appliances are rated using a number or letter scale (e.g. 1-5 stars, or letters A-G) and these are much more readily understandable to consumers. We also recommend that buildings (homes and commercial buildings) receive efficiency ratings based on their energy use, building size, building type and other characteristics. Such labels would provide information to prospective purchasers and renters, and would be an incentive for building owners to upgrade their buildings before they put them on the market. Likewise, we support benchmarking of commercial buildings and industrial processes, so owners can compare their facilities to similar facilities and identify buildings and processes that are below average and should be upgraded.

Question 2. How do we develop metrics for consumers to base their decisions that is accurate across many different consumers, environments, and scenarios?

Answer. Labels and metrics typically are based on average usage patterns and costs. For the typical consumer, this provides an easy to use "ballpark" estimate. If too many variables are presented, many consumers will not immediately understand the information and will not pay attention. For consumers who want more details, I would suggest greater use of websites, including tools that can be accessible on smart phones and other handheld devices that consumers could access while they are shopping.

RESPONSES OF JOSEPH M. MCGUIRE TO QUESTIONS FROM SENATOR BINGAMAN

Mr. McGuire, I assume that you have read the article in this Monday's New York Times entitled, "When Energy Efficiency Sullies the Environment" which contends that the most recent report by Consumer Reports found that "no top-loading (washing) machine got top marks for cleaning."

Question 1. I'd appreciate your general views on the piece, and more specifically, your views on whether energy efficiency standards have reduced the performance of top-loading washing machines.

Answer. In the New York Times column, "When Energy Efficiency Sullies the Environment," the author leaps to the unfounded conclusion that there is a choice to be made when washing your clothes: either wear clean clothes or save energy; but not both. The facts do not support that. The appliance industry has a long history of making energy efficient appliances that also offer optimal performance. In fact, do not take our word for it, read the Consumer Reports Blog, which says the New York Times article's "interpretation of Consumer Reports' washer tests is misleading" and "As an organization that tests both performance and energy efficiency, Consumer Reports has seen product performance improve or remain at high levels, while energy efficiency standards have become increasingly stringent over the years. Washing machine performance has actually improved while dishwashers and refrigerators performance has remained at high levels."

Replacing an eight year old clothes washer with a new clothes washer of average efficiency will save the average household more than \$130 in electricity costs per

year, and will slash water usage by 5,000 gallons per year. All this—and clean clothes! How can you go wrong?

The column, however, does foreshadow a real issue for the future in that we cannot blindly drive toward ever increasing efficiencies without considering performance. This balance is recognized by the appliance industry's support for the ENERGY STAR program's decision to couple soundly developed performance standards into future efficiency increases thereby ensuring that any future mandatory standards fully take into account the effect on product utility.

In addition, there is a pathway to efficiency gains that provide tremendous potential for saving energy and protecting the environment with no compromise of product performance, and that is through smart appliances that can automatically operate at a time of day when electricity prices are lower, to save consumers money on the utility bill, and reduce peak demand which would cut the number of wasteful, but necessary, peaker power plants around the country.

Consumers can purchase home appliances with confidence knowing that modern appliances offer many more features and conveniences than yesterday's white goods, and save significant amounts of energy. And just around the corner manufacturers will introduce smart grid enabled appliances that will provide creative new and innovative ways to cut energy use while offering maximum consumer benefits.

Question 2. Mr. McGuire, on page 3, you say that standards alone are not effective at promoting the development and deployment of efficient products, and standards are of decreasing value as products get more efficient. You point to manufacturer tax credits targeted to increased production of super-efficient products as the model for deploying efficient products and creating jobs.

Would you outline a specific example of how these credits help to deploy a new product that would not otherwise have been commercialized, and how many jobs this created?

Answer. The tax credit for super-efficient appliances is a model of an incentives-based approach rather than a regulatory-based approach that helps every day Americans to save money on their electric bill. It is a model because it drives continual improvement. Tax credits in any given year can only be claimed for additional super-efficient appliances that are sold over and above previous years' production. As the government looks to save consumer's energy and reduce this country's dependence on foreign oil, this tax credit has a proven track record of success. In 2008, there were no refrigerators that were 30% more efficient than the federal minimum. However, a tax credit was enacted that year for a 30% more efficient refrigerator and, in 2009, there were approximately 200,000 refrigerators that were 30% more efficient.

Question 3. Mr. McGuire, on page 3, you mention that there is a non-legislative element in the agreement your association negotiated with other stakeholders that "will jump start the smart grid by helping to deploy smart appliances nationwide and enable consumers to better take advantage of demand—response and real-time pricing opportunities."

Would you expand on this by providing an example of how this would work, and explain why this is a non-legislative component of your agreement?

Answer. We submitted a petition to ENERGY STAR along with efficiency advocates and environmental and consumers groups request a recognition of the benefits of smart appliances to the consumer and the grid through a 5% allowance. The petition was accompanied by a detailed and technical evaluation from the Pacific Northwest National Lab justifying that the benefits attributable to smart-grid capability are more than the 5% allowance requested. The full petition and PNNL analysis and report can be found at www.aham.org/smartgrid. It is our hope that the ENERGY STAR program will agree to this petition. The President and Secretary Chu have talked about the need to modernize our grid, and the ENERGY STAR can jump start the smart grid by providing a 5% incentive to manufacturers to build and sell smart appliances in anticipation of dynamic pricing coming in the future. ENERGY STAR is well positioned to provide this recognition to the consumer of these current and future benefits, but they may need to adjust the program's traditional policies to help the nation accomplish this objective.

Question 4. Some argue that Federal regulation of appliance efficiency is inappropriate government intrusion in the marketplace. After 25 years of this program, what do you believe the impact of these regulations has been on your industry, on job creation, and on the U.S. economy?

Answer. For over 20 years, the industry has supported the increased certainty of having 1 federal regulation on appliance standards that preempts state standards in this area. Prior to this current regulatory framework, states were free to develop their own appliance standards creating a patchwork of 50 differing standards. This situation—50 differing regulations—is unfriendly to business and to consumers.

Ideally, a North American market, or even global market, would be supported through a harmonized agreement on appliance standards. The theoretical discussion of whether government has a role in this area is supplanted by the reality that governments—states, California, and around the world—are involved in setting minimum energy standards for appliances. Our industry is faced with these realities and prefer less regulation, ie, 1 federal regulation, as opposed to increased and inconsistent regulations.

Question 5. Some argue that Federal regulation of appliance efficiency is inappropriate government intrusion in the marketplace. After 25 years of this program, what do you believe the impact of these regulations has been on your industry, on job creation, and on the U.S. economy?

Answer. Same as #4.

RESPONSES OF JOSEPH M. MCGUIRE TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. The industry has found negotiating agreements, which can be implemented legislatively, provide a better framework to reach an acceptable conclusion and provide the industry more certainty than a regulatory process. The reason is that negotiations are not restricted by the walls of a regulatory rulemaking process. For example, our recent agreement brought in providing incentives for smart appliances through the ENERGY STAR program, which could not be done through a DOE rulemaking. Our agreement also included tax incentives for super-efficient appliances, which must be legislated. Further, having standards implemented through legislation removes the uncertainty from a lengthy rulemaking process.

Question 2. How was consensus achieved on the proposed standards and how do you define “consensus” in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. We were not involved in the incandescent bulb standard, but for our recent agreement, consensus has essentially been a unanimous agreement by all stakeholders. We are not aware of any opposition to our agreement and it has been widely publicized since July 2010.

RESPONSES OF JOSEPH M. MCGUIRE TO QUESTIONS FROM SENATOR PORTMAN

Question 1. I think one of the largest barriers to wide-spread deployment of energy efficiency technologies on both the industrial/commercial side and the residential side is education. As a consumer it is pretty difficult with the tools available to us today to wrap your head around how much energy you use in a day or a year, and then it is even tougher to figure out how much a certain energy efficiency technology can save eventually save you. I believe this uncertainty makes it hard for a consumer to commit to investing the upfront money in energy efficiency technology, and I think it is one of the reasons why so many get concerned when governments talk about mandates on energy efficiency. Simply put, the uncertainty leaves a lot of money on the sidelines. Do you agree? If so, what is the solution?

Answer. Currently, many tools exist for the consumer to learn about the amount of energy used by an appliance and the cost savings that can occur through the purchase of newer more efficient appliances. The Federal Trade Commission requires a prominently placed bright yellow ENERGY GUIDE label on the front of all appliances sold at retail, and requires energy information to also be displayed online. This label was recently changed to include a more prominent display of annual operating cost, in addition to Kilowatt-hours used by that appliance. Consumers have also come to rely on the ENERGY STAR label offered only to products that register efficiencies greater than what is required by the federal minimum efficiency standards. ENERGY STAR is one of the most recognized brands, signifying additional energy and costs savings. In addition, the ENERGY STAR web site includes a calculator which can help a consumer make an informed choice by determining the amount of energy used by their current appliance, and the potential savings offered through a new appliance.

Question 2. How do we develop metrics for consumers to base their decisions that is accurate across many different consumers, environments, and scenarios?

Answer. The next generation of appliances, called smart appliances, will be designed to operate in coordination with the future Smart Grid. These appliances, under development, will be able to receive and respond to signals from the electrical power grid that will automatically enable the appliance to defer or delay an energy using cycle until the power is less expensive to consume. This may sound futuristic, but these appliances will be available in the market if the proper incentives are put in place and will offer added benefits beyond just energy savings. Through the inte-

gration of home energy management systems, which will likely be used with these smart appliances, a consumer will know exactly how much energy a particular appliance is using. AHAM is requesting government and electric utility policies that will promote and incentivize the market introduction of these appliances. One such policy that would allow for more information to the consumer would be the offering of dynamic pricing from utilities to the consumer to incentivize consumers to consume power when it is cheapest, or when renewable sources are available. These appliances will one day benefit all Americans.

RESPONSES OF KYLE PISTOR TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. How do you respond to the argument of the proponents of BULB that all bulb technologies, including the traditional incandescent bulb, should be available so that consumers can select the one that best meets their needs. That is, let the market decide?

Answer. Light bulbs are designed, manufactured, and distributed for national markets. We support consumers being able to choose what type and style of light bulbs meet their needs. But when individual states set efficiency requirements on light bulbs that would require manufacturers to make different bulbs for different states, as what was happening in 2007, then market-based, cost-effective options are not being provided to consumers. State actions would have distorted the market and limited consumer choices. A minimum consensus federal efficiency standard as set forth in EISA 2007, that pre-empts conflicting state rules, continues to provide consumers with new energy-efficient incandescent light bulbs along with other technologies.

EISA 2007 continues and expands consumer choice with all technology options. The federal legislation does not reduce consumer options, but supports varied options for consumers. Federal action was needed to prevent state actions that would have limited consumer choices.

Question 2. Some argue that Federal regulation of appliance efficiency is inappropriate government intrusion in the marketplace. After 25 years of this program, what do you believe the impact of these regulations has been on your industry, on job creation, and on the U.S. economy?

Answer. NEMA supports a federal program of efficiency standards, test procedures and product labeling/information for agreed-upon consumer products and commercial equipment. The success of a federal program is based on using industry efficiency standards that are incorporated into consensus legislative proposals or DOE adoption of consensus agreements. The federal program has resulted in providing regulatory certainty for manufacturers regarding research and development, innovation deployment, and product manufacturing. This also benefits consumers with cost-effective, energy-efficient products that reduce their energy bills. NEMA members operate in a globally competitive environment and are adjusting product offerings in response to changing market and consumer demand. If our members had to face a patchwork of conflicting state requirements for products our competitiveness would be greatly reduced as compared to having a federal program. The federal program has benefited the nation through reduced product costs to consumers as manufacturers are able to plan and produce a product for one national market rather than different state markets.

Question 3. On page 10, you say that NEMA represents 15 companies that sell over 95 percent of the light bulbs used in the United States and you reaffirm their support for the energy-efficient light bulb provisions of EISA 2007.

What do you believe the short-term and long-term impacts of enactment of the BULB Act would be on your industry?

Answer. Following the enactment of EISA 2007, manufacturers had regulatory certainty and proceeded to make millions of dollars in investments in research and development, plant and equipment, work training, and new product and safety testing for EISA-compliant products. The first of those federal requirements are now only nine months away (January 2012). Repeal of the EISA 2007 light bulb provisions would strand millions of dollars in investment, create significant regulatory uncertainty, and undermine investments in new research and development and corresponding job employment. Further, uncertainty would be re-introduced to the market because states would again have the ability to pass their own efficiency standards for light bulbs as was happening in 2007. In the long term, a repeal of the U.S. standards would put American manufacturers at a competitive disadvantage in the global marketplace. U.S. firms operate in a global marketplace and are competing in markets that are moving towards more energy-efficient lighting.

RESPONSES OF KYLE PISTOR TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. Halogen technology has been around for many, many years, and yet we are just now taking to market an incandescent halogen bulb with 30% energy savings. Furthermore, the catalyst for this new product was the mandates in EISA 2007. If the halogen technology was known to provide energy savings, why didn't the market demand it a long time ago?

Answer. While halogen technology (a type of incandescent lighting) has been around for decades, the energy saving versions that meet the EISA 2007 requirements have only recently been developed for widespread commercial distribution. Advanced incandescent-halogen is more expensive than regular incandescent bulbs to produce.

Question 2. There have been stories in the media about job loss due to the new light bulb standards. Can you talk about the current job outlook as it pertains to the lighting industry? Are there any job trends occurring within the industry?

Answer. The U.S. lamp industry operates in a globally competitive market and is changing its manufacturing footprint as needed to address changing market conditions. The changing global markets have increased demand for energy efficient lighting and decreased demand for older technologies. Today, the U.S. lamp industry represents 12,000-14,000 U.S. jobs with job growth occurring in the energy-efficient and advanced lighting sectors, such as LED lighting.

Question 3. There was an educational campaign in the Energy Independence and Security Act of 2007 that was authorized to spend \$10 million to educate consumers on the new standards contained within the Act. That authorization was never funded. What has industry done to educate consumers on the new standards?

Answer. Notwithstanding the lack of federal government funding support for consumer education, the industry has taken efforts to assist consumers understand the benefits of energy-efficient lighting options. Industry has:

- formed a coalition called LUMEN (Lighting Understanding for a More Efficient Nation) with the American Lighting Association and the Alliance to Save Energy. This group is focusing on disseminating correct information about the lighting transition to utilities, retailers, media and consumers.
- designed a new label with the Federal Trade Commission for light bulb packages to provide key buying and performance information.
- organized a task force focused on providing information on the lighting transition. This group published "The 5 Ls of Lighting" (lightbulboptions.org) for use by media, retailers, consumers and all interested parties. Also, factual data was printed in a "Lighting Options for Your Home" brochure.
- Individual manufacturers are also working with retailers, utilities and other channel partners to provide point-of-sale information to consumers.

Question 4. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. When moving an appliance standard through the legislative process, all interested parties come together to negotiate a recommendation that is submitted to legislators only when a broad consensus agrees to the proposal. There is a free flow of information and discussion by interested parties in reaching the consensus recommendation.

Under the regulatory process, the Department of Energy convenes a public workshop and solicits comments from stakeholders on what the standard should be. The DOE staff and its contractors then put forward a proposal for further "notice and comment." Interested parties provide comments but there is no "back and forth" dialogue with the agency staff or its contractors until a final rule is issued.

The legislative process is more transparent and provides for more ability to achieve a consensus that works for all stakeholders than the regulatory process. The regulatory process also takes several years to reach a result and at a cost to the tax-payer. Having the interested parties convene and reach an agreement is faster and less expensive.

Question 5. How was consensus achieved on the proposed standards and how do you define "consensus" in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. Interested parties (industry, environmental advocates, and other stakeholders) were brought to the table to negotiate the new standards. During 2007, the parties came to an agreement and presented that agreement to Congress. "Consensus" exists with the absence of significant opposition by an interested stakeholder.

RESPONSES OF KYLE PISTOR TO QUESTIONS FROM SENATOR PORTMAN

Question 1. I think one of the largest barriers to wide-spread deployment of energy efficiency technologies on both the industrial/commercial side and the residential side is education. As a consumer it is pretty difficult with the tools available to us today to wrap your head around how much energy you use in a day or a year, and then it is even tougher to figure out how much a certain energy efficiency technology can save eventually save you. I believe this uncertainty makes it hard for a consumer to commit to investing the upfront money in energy efficiency technology, and I think it is one of the reasons why so many get concerned when governments talk about mandates on energy efficiency. Simply put, the uncertainty leaves a lot of money on the sidelines. Do you agree? If so, what is the solution?

Answer. Some residential consumers only consider the initial cost in buying a product/appliance and do not factor the electricity costs of operating the product/appliance over its lifetime. Commercial consumers typically evaluate products on their operating and initial costs. The challenge is to provide relevant information to residential consumers so they can make a more informed decision that takes into account the initial purchase price and the operating costs over time. The consumer can then make a decision based on their specific situation.

Question 2. How do we develop metrics for consumers to base their decisions that is accurate across many different consumers, environments, and scenarios?

Answer. The new Lighting Facts label, mandated in a final rule by the Federal Trade Commission per EISA 2007, is a good example of how to get consumers information on energy and money saved by energy efficient light bulbs. This label will provide consumers the ability to compare different lighting choices on the energy saved over the lifetime of the bulb. It will also give them an understanding of the operating costs. They will then be able to compare that to the price of purchasing the bulb and thus understand their energy and money savings by purchasing the product.

RESPONSES OF MARK COOPER TO QUESTIONS FROM SENATOR BINGAMAN

Mr. Cooper, the results of the recent CFA consumer poll found that nearly all Americans—95 percent—think that it is beneficial for appliances to become more efficient, and that a large majority—72 percent—support the government setting minimum energy efficiency standards.

Question 1. Do these findings also apply to light bulbs which many people might not think of as appliances?

Answer. While CFA did not specifically ask about light bulbs, my testimony reviewed several surveys that indicate a similar level of awareness of and support for energy efficiency and standards dealing with light bulbs.

Question 2. Mr. Cooper, you provide a thorough analysis of what you call the “energy efficiency gap”, and identify five general market imperfections that result in our nation’s waste of energy.

Please give me an example of the three imperfections that you believe most contribute to energy waste in our economy.

Answer. Because inefficient appliances require less technology, they are less costly and more profitable than more efficient appliances, appliance manufacturers have an incentive to exploit their information advantage over consumers and advertise, stock and push less efficient appliances. In addition, because energy consumption is imbedded in a multi-attribute product, appliance manufacturers can influence consumer choice strongly by choosing the combinations of attributes to offer. Appliance manufacturers who might contemplate offering more efficient appliances face the risk that others will not and inertia will make it difficult to wean consumers from inefficient products.

The information advantage stems from the fact that consumers lack access to good information and have difficulty making the lifecycle cost calculations (future energy prices, quantities of energy consumed).

In many instances, consumers do not make the choice of appliances, but landlords or builders do. Their preference for low first cost appliances and familiarity with existing technologies depresses the inclusion of technologies that reduce energy consumption.

RESPONSES OF MARK COOPER TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. A concern for many consumers, as in the case of light bulbs, is that the new, more efficient appliances will not be of the same quality as the less efficient ones. What is CFA’s position on these concerns?

Answer. Because the standards are technology neutral and promote competition between light bulb manufacturers, consumers will be provided a wide range of choices. As demonstrated at the hearing, there are half a dozen technologies already being offered by major light bulb manufacturers and the standard has not yet gone into effect. We have every confidence the marketplace will meet consumer needs.

Question 2. Please describe the analysis and research you undertook to determine, as described in your testimony, that “.homes in which consumers live will command a higher resale because they are more energy efficient.”

Answer. CFA has conducted extensive analysis of the auto market where the evidence is quite clear that more efficient automobiles command much higher prices. The housing literature also supports this conclusion. This conclusion is common knowledge. A sample of results from a web search yields the following results.

There was a study published in the *Appraisal Journal* 10-1998. The last 3 paragraphs summarize:

The convergence of the fuel expenditure coefficients around -20 is consistent with research findings that the selling price of homes increased by \$20.73 for every \$1 decrease in annual fuel bills. 2. Other research supports the underlying conclusion that energy efficiency increases home value by an amount that reflects annual fuel savings discounted at the prevailing after-tax mortgage interest rate. 3. The implication for home buyers is that they can profit by investing in energy-efficient homes even if they do not know how long they might stay in their homes. If their reduction in monthly fuel bills exceeds the after-tax mortgage interest paid to finance energy efficiency investments, then they will enjoy positive cash flow for as long as they live in their homes and can also expect to recover their investment in energy efficiency when they sell their homes.

The implication for appraisers is that cost-effective energy efficiency investments do appear to be reflected in residential housing market values. Therefore, the appraised value of energy-efficient homes could under-state their actual resale value if the comparables used in the appraisal do not reflect the value of a cost-effective energy efficiency investment.

<http://homeenergypros.lbl.gov/group/resalevalue>

A peer-reviewed study published in *The Appraisal Journal* shows that homebuyers are willing to pay substantially more for energy-efficient homes. This study, titled “Evidence of Rational Market Values for Home Energy Efficiency,” concludes that people are willing to fully pay for the monthly fuel savings of energy efficient homes with higher monthly mortgage payments” which translate into higher home values. Thus, homebuilders and homeowners who invest in energy efficiency can expect to recover the market value of their energy efficiency investments when they sell their homes.

The ICF study reviews published research on energy efficiency and home values, and presents an extensive statistical analysis of American Housing Survey (AHS) data. The published research shows that market values for energy efficient homes appear to reflect a rational trade-off between homebuyers’ fuel savings and their after-tax mortgage interest costs. The ICF statistical analysis explicitly tests this “rational market hypothesis” against National AHS data for 1991, 1993, and 1995, and metropolitan statistical area data for 1992 through 1996. Both of these distinct AHS samples provide data on home characteristics (including home value, number of rooms, square feet, lot size, and utility bills) as reported by homeowners in lengthy interviews with the Census Bureau. The study presents separate statistical results for each year, for detached and attached homes, and for detached housing with different heating fuels (gas, electric, or fuel oil).

These statistical results support the conclusion “That home value increases by \$20 for every \$1 reduction in annual utility bills”, consistent with after-tax mortgage interest rates of about five percent from 1991 through 1996.

This research was conducted for the U.S. Environmental Protection Agency (EPA) ENERGY STAR® Homes program. ENERGY STAR® homes use at least 30% less energy than a Model Energy Code home while maintaining or improving indoor air quality and increasing comfort in the home. EPA estimates that the cost to upgrade a new home to ENERGY STAR® levels can range from \$2,000 to \$4,000, and that a typical ENERGY STAR® home reduces utility bills by \$420 per year. The ICF study indicates that \$420 in annual utility savings will add about \$8,400 to the market value of an ENERGY STAR® home (or to any equally efficient home), or two to four times the builder’s upgrade costs.

The study should also encourage homeowners to consider energy efficiency upgrades for existing homes. An important conclusion from this research is that home-

owners “can profit by investing in energy efficient homes even if they are uncertain about how long they might stay in the home. If their reduction in monthly fuel bills exceeds the after-tax mortgage interest paid to finance energy efficiency investments, then they will enjoy positive cash flow for as long as they live in their home and can also expect to recover their investment in energy efficiency when they sell their home.” This research also has significant implications for home appraisers, mortgage lenders, and housing assistance programs at the federal, state, and local levels.

Written by: The Appraisal Journal by Rick Nevin and Gregory Watson <http://www.universalfotech.com/energy-efficiency-upgrades-incre.htm>

Many people are reluctant to improve the energy efficiency of their home when they might be moving out in just a few years. But the evidence is clear that investments in energy efficiency lead to higher home resale values. A recent study published in The Appraisal Journal shows that the market value of a home increases by \$10—\$25 for every \$1 decrease in annual fuel bills. The study confirms what many have believed for years: Energy efficiency substantially increases the market value of owner-occupied homes.

The study was conducted by ICF Consulting with funding from the Environmental Protection Agency. It involved extensive statistical analysis of American Housing Survey data collected by the Department of Housing and Urban Development between 1991 and 1996. The research was based on detailed interviews (including a review of energy bills) that are conducted every other year at a sample of over 16,000 housing units all across the nation. Even taking many other correlated home features into account, the study confirmed energy efficiency improvements do result in higher home values:

With after-tax interest rates between 4% -10% and stable fuel price expectations, home buyers should pay \$10—\$25 more for every dollar reduction in annual fuel bills resulting from energy efficiency¹

If home buyers expect stable fuel prices, and after-tax mortgage interest rates are in the 4-10% range, then the logic is straightforward. Paying \$10 up front to save \$1 on your annual fuel bill is like making an energy efficiency investment having a 10% return. Paying \$25 up front to get the same \$1 in annual savings yields a 4% return. ICF’s study confirms that the housing market really does reward those who invest in energy efficiency with a higher price at resale.

The most important conclusion from this research is that homeowners can profit by investing in energy efficiency, even if they don’t know how long they will be staying in the home. “If their reduction in monthly fuel bills exceeds the after-tax mortgage interest paid to finance energy efficiency investments, then they will enjoy positive cash flow for as long as they live in their home and can also expect to recover their investment in energy efficiency when they sell their home.”

These findings are backed up by seven other studies conducted since 1981, all of which found higher home values associated with energy efficiency. The three most recent of these report home value increases of between \$11 and \$21 for every dollar saved through reductions in annual fuel bills. But why do some homeowners still hesitate to increase their insulation levels or replace those old windows? Many are concerned that appraisers won’t take their improvements into account and that therefore they won’t get credit for these investments. But these studies show that even if an appraiser fails to cite these improvements, home buyers do notice and are willing to pay more.

What can you do?

Make sure your appraiser and your real estate agent know you made the energy efficiency improvements and let them know about this important research. For more information on the study check out the ICF Consulting press release or visit the Residential Energy Services Network (RESNET) web site.

Estimated Increase in Resale Value for Energy Efficiency Upgrades*		
Recommended Energy Efficiency Upgrade	Annual Savings	Projected Home Value Increase
Replace old single pane windows with energy efficient double pane windows	\$350	\$7,000
Replace old central air conditioning unit with new energy efficient system. (hot climates)	\$300	\$6,000
Replace old furnace with new energy efficient furnace (cold climates)	\$300	\$6,000
Seal and insulate duct system	\$250	\$5,000
Install Programmable Thermostat	\$80	\$1,600
*Savings shown are rough estimates for typical homes built before 1980. Actual savings will vary depending on climate, current equipment characteristics, fuel prices, and occupant behavior. Projected Home Value Increases are based on the study, "Evidence of Rational Market Valuations for Home Energy Efficiency" by Rick Nevin and Gregory Watson, published in the October, 1998 issue of The Appraisal Journal.		

<http://www.energycheckup.com/content/IncreaseHomeValue.asp>

ENERGY-EFFICIENT HOMES OFFER LOAN PROSPECTS

Imagine financing a mortgage for a home made almost entirely out of beer bottles. Or a house built halfway into the ground, using old car tires in the construction. While houses like these may seem far fetched, a very small, but growing segment of the home lending market is made up of such energy efficient homes that don't fit the traditional mold.

Of course, most of these homes are not made out of bottles or tires. Many of them are made out of materials that people have been using for hundreds of years but which are more sought-after in these conservation-friendly times. For instance adobe, the insulating earthen bricks used in southern climates, is a relatively common construction material in the southwest because of its ability to keep out the summer heat and retain the sun's warmth in winter.

But many of the newer energy-efficient homes are being made out of more unusual materials such as Rostra block—a sort of large brick made up of recycled materials like concrete and Styrofoam cups. Other homes are made from materials like straw bales, used tires and incorporate unusual energy efficiency designs.

Despite the fact that such homes are not found on every block and cul-de-sac, providing mortgages turns out to be a relatively run-of-the-mill procedure. The more of them that are built and retain their value, the more mainstream the lending becomes. Take EarthShips, a housing construction in New Mexico that includes a variety of energy efficient designs and uses tires in the construction.

"Up until about a year ago, the secondary mortgage market had no comps for these Earth Ships," says Angel Keyes, vice president and CIO of Centinel Bank of Taos in N.M. Now it's just like any other construction loan."

RETAINING RESALE VALUE

The efficiency of super energy efficient homes improves their value, and they are proving to be good investments as the homes are re-sold for much more than they cost to build, community bankers say. "It's incredible how the market rewards for that type of construction," Keyes says.

Previously, Keyes says, the appraisals were low for most of the newer homes, but over time that has changed. "What we do see now is that we have transactions and you see equity gained."

Charter Bank in Albuquerque, N.M., is very active in making loans on homes constructed from non-traditional materials such as straw bale and rammed earth. Glenn Wertheim, president of Charter Mortgage Co., is familiar with this type of housing and says knowing the particulars of a home's location is the important thing in making lending decisions.

"The process for considering and placing financing on these less traditional homes isn't really any different. You simply have to consider these property distinctions in the under-writing process," Wertheim says. "In that consideration, I would say, you have to have a much better than average expertise in underwriting appraisals, and know the markets you are lending in intimately, down to the neighborhood...For

new construction you have to look at the builder's credentials and expertise in using nontraditional building materials. Ultimately you have to judge the market acceptance and desirability of the home within its neighborhood."

The question is this, says Enchain, "Is our collateral value secure relative to the loan we make on the property?" "Because nontraditional materials like adobe and straw bale are more common in New Mexico, Charter Bank can generally offer any of its regular home loan products to customers," Wertheim explains. Some loans fall outside the regular secondary market guidelines but meet the bank's investment criteria. "We offer a variety of portfolio loan options to our customers. We have worked with our investors and government agencies over the years to help them become comfortable with this type of lending." Jerry Walker, executive director of the Independent Community Bankers of New Mexico, says many of these structures are made well and have proven themselves over time, particularly the adobe homes, which he says have amazing insulation and durability.

If the structure is sound, Walker says, the process is simple. "Once the state and local building officials have signed off on [these homes], they are treated like any other type of mortgage," he says.

ENERGY SAVINGS TOUTED

The trend toward more energy efficient houses is capturing the attention of those in the housing business, according to Robert Sahadi, vice president for Housing Impact at Fan-me Mac. "There's a wealth of things happening," he says. "It's something lenders and home builders have become pretty excited about," adding that such homes "have become much more conventional over time." Sahadi says Fannie Mae is not as concerned about whether houses have unusual features as long as their energy efficiency can be verified. He also says if a home is unable to get an appraisal that is commensurate with the cost of building it, an addendum can be used calculating the energy savings and tacking it on to the value of the home.

And it's not just in the Southwest that these houses are found. While they are popular in places like Arizona, California and New Mexico, they are sprinkled all over the country, says Sahadi, who noted building these homes has been "very aggressive" in cities like Columbus, Ohio, and Indianapolis.

"Nationally, builders have been devoting more time to the construction of these types of homes," he says, conceding that a prejudice against them had to be overcome first. But over time, because of improved technology and a lower cost of building such features, more of these homes are going up. The more commonplace they are, the more accepted they are among homebuyers and lenders. As Sahadi puts it. "This is a theory whose time has come."

The time may be even more close at hand considering the increasing awareness of energy usage and cost. Sahadi suggests that with the energy situation in California this year and growing energy costs elsewhere, the idea of living in a home that helps conserve energy is growing in popularity.

Reyes agrees, pointing out that residents in his area seek out homes that save energy costs. "Now you have more and more demand for self-sustaining homes," he says. That is not only because they save money on energy bills, but because people are getting more interested in conservation in its own right. "You have more people who are aware of the needs of the environment," Reyes says.

Reyes also believes that the future is bright for growth in energy-efficient housing once people become more aware of its benefits. "The market has not realized the potential as with other types of housing."

Apparently financing mortgages for unconventional housing has come a long way, and it looks as though they are here to stay. Local lenders, who are very familiar with their communities are seeing the need for such lending products are embracing them. Gone are the days when, as Walker puts it, federal lenders would look at a mortgage application for an adobe house with a great deal of skepticism. They'd see 'mud houses,' and I'm sure they would probably scratch their heads."

http://www.earthship.net/index.php/Store/Store/begin-here/banners/codes-regulations-laws/begin-here/food/index.php?option=com_content&view=article&id=247

Question 3. What are the different skills required, as described in your testimony, to install energy efficient products? Do these skills require increased training, thus increased installation costs?

Answer. The different skills involve training on installation and maintenance as well as more time to install. These will require training in the transition period and some increased installation costs in the long term. These increased costs have been factored into the cost benefit analysis that were conducted to evaluate the standards. Even with higher equipment and installation costs, the appliances yield substantial consumer benefits.

Question 4. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. The Congress has established general legislative goals for appliance standards. The Administrative Procedures Act also governs the process of writing rules. Congress can change the goals and speed the regulatory process by specifying goals or changing the criteria for setting standards.

Question 5. How was consensus achieved on the proposed standards and how do you define “consensus” in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. CFA was a party to the negotiations between the industry and public interest groups last year. We, along with other consumer groups, efficiency groups and industry representatives, endorsed the consensus agreement and the standards when they were conveyed to the Department of Energy. We cannot speak to consensus being achieved in 2007 as we devoted our efforts to the fuel economy aspects of the legislation.

RESPONSES OF MARK COOPER TO QUESTIONS FROM SENATOR PORTMAN

Question 1. I think one of the largest barriers to wide-spread deployment of energy efficiency technologies on both the industrial/commercial side and the residential side is education. As a consumer it is pretty difficult with the tools available to us today to wrap your head around how much energy you use in a day or a year, and then it is even tougher to figure out how much a certain energy efficiency technology can save eventually save you. I believe this uncertainty makes it hard for a consumer to commit to investing the upfront money in energy efficiency technology, and I think it is one of the reasons why so many get concerned when governments talk about mandates on energy efficiency. Simply put, the uncertainty leaves a lot of money on the sidelines. Do you agree? If so, what is the solution?

Answer. While information is a problem, there are many other market imperfections that inhibit the inclusion of technologies that would increase energy efficiency. My response to Chairman Bingaman’s question above outlines several of these. My testimony identified about a dozen imperfections that are addressed by efficiency standards.

Question 2. How do we develop metrics for consumers to base their decisions that is accurate across many different consumers, environments, and scenarios?

Answer. Labeling programs have relied on simple message like percentages, estimated bills or even latter grades. Efficiency standards address the problem more directly by establishing minimum standards that ensure appliances have consume no more than the specific level of energy. This relieves the consumer of having to ascertain the level of energy consumption. Of course, information is still useful to allow appliance makers to market and consumers to purchase appliances that exceed the standard.

RESPONSE OF KATHLEEN HOGAN TO QUESTION FROM SENATOR BINGAMAN

Question 1. Ms. Hogan, you conclude by saying that “S. 398 contains provisions that . . . could streamline DOE’s standard-making process.”

Does DOE have any rough estimate of the savings that are expected to result from such streamlining?

Answer. S.398 codifies agreements that were negotiated, signed, and promoted by a cross-section of stakeholders representing consumer advocacy groups, manufacturers, manufacturer trade associations, and energy efficiency advocacy organizations, all of whom support this bill. The negotiated consensus agreements would establish energy conservation standards for 14 products, several of which are in the midst of DOE’s ongoing standards and test procedure rulemakings. If the standards in S.398 are codified, DOE would end the rulemakings for those products. Time and resources could then be reallocated to other areas.

DOE is scheduled to issue final rules for some of the products addressed in S.398 (furnaces, room air conditioners, clothes dryers, central air conditioners, heat pumps) by June 30, 2011. S.398 also prescribes standards for residential clothes washers and dishwashers. DOE was not scheduled to complete these rulemakings until December 2011 and January 2015 respectively. The direct cost savings from streamlining the rulemaking process for the consensus standards are substantial—well over \$10 million in program costs through 2015. The exact amount of savings that would result from streamlining these standards is difficult to quantify, however, since it depends in large part on the timing of INCAAA’s passage. If INCAAA was passed in the next few weeks, it would save up to two months or more of work on even those standards for which DOE is set to issue final rules by June 30. Even

if INCAAA were passed after June 30, it would still speed up the timeline to implement these standards, enabling consumers to realize energy savings sooner.

RESPONSES OF KATHLEEN HOGAN TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. Is the rulemaking process undertaken by contractors or is it done by DOE employees?

Answer. Each and every instance of DOE rulemaking is led by a DOE product manager. The product manager will have oversight responsibility over any contractors that carry out the technical analyses required by the rulemaking process. The rulemaking analysis is guided by an internal review process, which begins at a standards program level and then proceeds to an inter-program level. The standards program level, in order to ensure compliance with DOE policies and quality standards, develops up-to-date standardized guidance for conducting and documenting the appropriate analyses. The documents produced by the DOE staff and contractors pursuant to the analyses are subsequently reviewed by teams of DOE staff consisting of scientists, economists and lawyers. This process helps ensure that any errors in analysis are kept to a minimum. Moreover, the process assists with the creation of Federal Register notices by standardizing and systematically updating the set of tools and templates to be used by DOE staff and contractors.

Question 2. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. The major difference between a standard adopted through the legislative process as opposed to the regulatory process is that the regulatory process cannot adopt a standard that contravenes any existing law. In contrast, legislation can change existing laws. For example, in establishing appliance standards through the rulemaking process, DOE is legally limited to considering only the product categories and efficiency descriptors that are specified in the Energy Policy and Conservation Act. Through legislation, however, Congress can specify additional products and descriptors. In this regard, an important feature of S. 398 is that it would give DOE the authority to set minimum efficiency standards for additional types of products including heat pump pool heaters, certain commercial, industrial, and outdoor lamps, bottle-type water dispensers, commercial food holding cabinets and portable electric spas. S. 398 also amends the definition of "energy conservation standard" to allow DOE to consider multiple efficiency descriptors for the same product. Currently, DOE lacks such authority.

Question 3. How was consensus achieved on the proposed standards and how do you define "consensus" in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. DOE considers the term "consensus standard" to mean a standard that is submitted jointly by interested persons and is fairly representative of the relevant points of view (including representatives of manufacturers of covered products, States, and efficiency advocates), as determined by the Secretary. DOE encourages stakeholders to explore opportunities for consensus standards. In the case of the consensus agreements that would be codified by S. 398, the parties developed those agreements through direct negotiations. DOE was not a party in those negotiations.

The new standards for the incandescent bulb would not be considered a consensus standard. The origin for that standard is legislative. Specifically, the Energy Independence and Security Act of 2007 (EISA) includes a provision setting an efficiency standard for 60-watt bulbs. However, DOE believes that the incandescent light bulb provision received broad stakeholder support at the time of EISA's enactment.

RESPONSES OF KATHLEEN HOGAN TO QUESTIONS FROM SENATOR SHAHEEN

CLEAN ENERGY STANDARD

Question 1. I would like to get your thoughts on the President's proposed Clean Energy Standard (CES). From what I have seen, the proposal doesn't list energy efficiency as a qualifying "resource", as it does for wind, nuclear and natural gas. I think this is a mistake, since the cheapest unit of power is the one we don't have to produce.

Several states include efficiency as a resource in their own Renewable Electricity Standards (RES). Even more states have their own separate Energy Efficiency Resource Standards (EERS). If these states recognize the value of efficiency as a "resource" shouldn't it also be recognized in Clean Energy Standard or a separate federal Energy Efficiency Resource Standard?

Answer. The Administration agrees that energy efficiency can play a vital role in securing our energy future. To that end, the Administration is pursuing a number of policies and programs to increase energy efficiency, including a range of activities

already underway at the Department of Energy as well as proposals such as HOMESTAR and the Better Buildings Initiative—as detailed in the President’s recently released Blueprint for Securing America’s Energy Future. The President’s CES proposal also explained that a CES should be paired with robust energy efficiency programs and measures that will lower consumers’ energy bills and should include provisions to help manufacturers invest in technologies to improve efficiency and reduce energy costs.

We look forward to working with Congress to develop legislation that achieves these clean energy goals.

Question 2. I would like to get your thoughts on the President’s proposed Clean Energy Standard (CES). From what I have seen, the proposal doesn’t list energy efficiency as a qualifying “resource”, as it does for wind, nuclear and natural gas. I think this is a mistake, since the cheapest unit of power is the one we don’t have to produce.

What role do you see for highly efficient combined heat and power (CHP) and waste heat recovery systems in a Clean Energy Standard? Aren’t these systems just as efficient and “clean” as natural gas, which IS included in the President’s CES?

Answer. The Administration agrees that energy efficiency—including in the industrial sector—can play a vital role in securing our energy future. That’s why the Administration has been aggressively pursuing industrial energy efficiency through the Department of Energy’s Industrial Technologies Program.

With respect to a Clean Energy Standard, the Administration believes that there are targeted opportunities to promote energy efficiency as part of a CES, particularly in the industrial sector. As discussed in the President’s Blueprint for Securing America’s Energy Future, a CES should include provisions to help manufacturers invest in technologies to improve efficiency and reduce energy costs. A CES could also be designed to award credit for electricity generated from onsite CHP and WHR facilities, in a way that would recognize the efficiencies gained through cogeneration. We look forward to working with Congress to explore these and other opportunities to promote energy efficiency and investment in clean energy in the industrial sector and throughout the economy.

FEDERAL GOVERNMENT ENERGY EFFICIENCY

Question 3. As you know, the federal government is the single largest energy user in the country. In fact, in FY 08 federal government buildings and their operations consumed 1.5 percent of ALL energy consumption in the U.S. The bill for the taxpayer that year for federal government energy use was \$24.5 billion, of which \$7 billion was spent on the energy needs for federal buildings.

Finding ways to make the federal government more energy efficient should be a top priority for our national energy policy. There are significant opportunities out there to save taxpayer dollars and improve the quality of service that our taxpayers expect from their government.

Can you tell me what opportunities you see in making our federal government more energy efficient?

Answer. Identifying opportunities by evaluating Federal buildings, investing in the deployment of energy efficiency and conservation projects (ECMs), continually monitoring the performance of these projects, and benchmarking building performance annually is the best approach for increasing energy efficiency. Federal agencies are implementing this approach as prescribed under Section 432 of the Energy Independence and Security Act of 2007. So far, Federal agencies have evaluated approximately a third of the Government’s 3 billion square feet of facility space and identified potential annual savings of 31 trillion Btu or 9 percent of facility energy use. Approximately \$7 billion in potential investment was identified, including projects that could potentially save 6 billion gallons of water annually. The potential annual cost savings from implementing these projects is \$600 million. Key types of potential ECMs agencies identified are listed below ranked in terms of number of projects:

- Lighting improvements
- Water and sewer conservation systems
- Heating, ventilation, and air-conditioning improvements
- Building controls and automation systems/advanced metering
- Building envelope modifications
- Boiler plant improvements
- Energy-related process improvements
- Electric motors and drives
- Chiller plant improvements
- Chilled/hot water, steam distribution systems
- Distributed generation opportunities, including renewable energy.

Conservation of energy through institutional changes, such as implementation of operations and maintenance best practices, building commissioning, default procurement of energy-efficient equipment, and workforce engagement is also important and could contribute up to an additional 10 percent reduction in facility energy use.

Question 4. As you know, the federal government is the single largest energy user in the country. In fact, in FY 08 federal government buildings and their operations consumed 1.5 percent of ALL energy consumption in the U.S. The bill for the taxpayer that year for federal government energy use was \$24.5 billion, of which \$7 billion was spent on the energy needs for federal buildings.

Finding ways to make the federal government more energy efficient should be a top priority for our national energy policy. There are significant opportunities out there to save taxpayer dollars and improve the quality of service that our taxpayers expect from their government.

Where are the gaps? Where should we be focusing our attention?

Answer. Based on preliminary data received from federal agencies for FY 2010, the federal government has reduced its energy intensity (Btu per square foot) in buildings by 15 percent compared to the FY 2003 baseline, meeting the goal set under the Energy Independence and Security Act of 2007. By the end of FY 2015, the goal is a 30 percent reduction. Recovery Act, regular appropriations and savings-financed investment of approximately \$5.8 billion in FY 2009 and FY 2010 for efficiency improvements in Federal facilities should keep the Government on track toward the 2015 goal and meet the reduction targets for FY 2011 (18%) and FY 2012 (21%). Beyond that, DOE estimates an additional \$5 to \$6 billion in investment in facilities will be required to meet the ambitious goal of a 30 percent reduction in FY 2015. Most of these projects will need to be accomplished through performance contracting arrangements that use the savings stream from reduced energy costs to finance the initial investments in capital improvements. Conservation of energy through institutional changes, such as agency leadership, implementation of operations and maintenance best practices, building commissioning, default procurement of energy-efficient equipment, and workforce engagement also play an important role.

Question 5. When I was Governor, I made energy efficiency in our state buildings a high priority. We were successful at it by utilizing energy performance contracting with energy service companies, such as Johnson Controls and Honeywell.

Can you tell me how we can better utilize energy performance contracting within the federal government?

Answer. Energy Savings Performance Contracts (ESPCs) as well as utility energy savings contracts (UESCs) allow federal agencies to accomplish energy savings projects without up-front capital costs and without waiting for Congressional appropriations. These are valuable tools and are particularly important if federal agencies are to meet their statutory and Executive Order goals in an era of budget constraints. The Department of Energy (DOE) awarded indefinite-delivery, indefinite-quantity (IDIQ) contract to 16 Energy service Companies (ESCOs). Theseis “umbrella” contract was awarded to ESCOs and their support teams based on their ability to meet stringent terms and conditions and can be used for any federally-owned facility worldwide. The DOE IDIQ contract is designed to make ESPCs as practical, cost-effective and streamlined as possible for Federal agencies. In addition, DOE provides project support and program monitoring of contract use and effectiveness.

Since the inception of the DOE program in 1998, 264 projects have been awarded and more than \$2.5 billion has been invested in Federal energy efficiency and renewable energy improvements. These improvements have resulted in more than 312.2 trillion Btu saved and more than \$6.6 billion of cumulative energy cost savings for the federal government. With project investment of \$440.2 million and \$589.3 million, respectively, and combined cumulative savings of over 128 trillion Btu, FY 2009 and 2010 were the program’s most productive years. However, meeting our government wide goals will require a substantial increase over even this level of utilization investment.

Accordingly, we have undertaken a number of actions to strengthen DOE’s management of the program—and will continue to look for ways to improve. We will shortly have in place a set of streamlined processes, which we will recommend to users, to shorten the cycle time it takes to design and award projects. We have recently modified the IDIQ contract to allow for a more streamlined approach to contractor selection—while preserving healthy competition among ESCOs at the task order level. We require competitive bids for project financing. We have substantially enhanced our training program for contracting and energy management officials; we offer workshops, webinars, other web based, and on-site training and have, over the past four years, increased the number of trainees from slightly over 100 to 800—1,000 annually. We improved management and oversight of the program to ensure

that savings are being fully realized. Additional areas of improvement be under consideration include: a mechanism to provide reduced and more consistent (i.e., less subject to market fluctuations) interest rates; combining federal and non federal funding for more comprehensive projects, and an examination of opportunities—not easily captured under the current program/business model—for large scale renewable energy projects on federal lands but not confined to an individual site or agency.

RESPONSES OF KATHLEEN HOGAN TO QUESTIONS FROM SENATOR PORTMAN

Question 1. Thank you for testifying before the committee today. As the Deputy Assistant Secretary for Energy Efficiency, you play an important role in implementing federal policy as it relates to energy efficiency. I agree with the concept that energy efficiency is the “lowhanging” fruit. By my count there are at least 19 active federal programs at the Department of Energy designed to incentivize the deployment or development of energy efficiency technologies. They focus on a number of different energy efficient areas, including energy efficiency in buildings, industrial manufactures, vehicles. They also use a number of different mechanisms to drive deployment including grants, loans, loan guarantees, and other direct or indirect regulatory incentives. As the Deputy Assistant Secretary for Energy Efficiency how do you coordinate the efforts of all these programs to ensure that we are making the most efficient investments in these technologies?

Answer. The Office of Energy Efficiency and Renewable Energy takes very seriously its role in coordinating efforts across programs to ensure the Department is making appropriate investments based upon budgetary directives. EERE leadership meets regularly with program managers and staff on both a collective and individual basis. Individual programs track progress against metrics vetted by senior leadership, and these metrics help inform the conversation.

Question 2. What metrics do you use to determine success or failure of these programs? How will EERE measure the investments in these programs against the actual energy efficiency benefits received?

Answer. All of the EERE programs choose multiple metrics so that emerging clean energy technologies can be compared to competing conventional technologies. For renewable energy generation technologies, the levelized cost of energy (LCOE) is an important metric that incorporates key costs such as the initial capital requirement, siting, permitting and operations and maintenance. Goals for developing cost competitive biofuels, batteries, and hydrogen technologies are based upon the price of existing fossil fuel sources. Energy efficiency programs use metrics that calculate the amount of energy avoided and green-house-gases (GHG) at the point of consumption and overall lifecycle cost savings compared to existing technologies. Finally, all of the EERE programs assess the barriers associated with each of these metrics, and then develop more detailed technical targets (e.g. efficiency, power density, yield, etc.) to measure the success of the programs.

Question 3. How do you ensure that there is no overlap with similar programs that are run out of the U.S. Department of Agriculture (USDA), the Small Business Administration, the Department of the Interior, and others?

Answer. The Department is committed to regularly engaging with other agencies about program activities in order to prevent interagency overlaps. For example, regarding biomass-related activities, DOE regularly coordinates through the Biomass Research and Development Board,¹ which is an interagency collaborative composed of senior decisionmakers from federal agencies and the White House—including DOE and USDA (cochairs); the Departments of the Interior, Transportation, and Defense, the Environmental Protection Agency; the National Science Foundation; and the White House Office of Science and Technology Policy. The Board is charged with maximizing the benefits of federal programs and bringing coherence to federal strategic planning in biomass research and development, including minimizing unnecessary duplication of activities. Several other interagency formal and informal collaborations function to leverage existing expertise across agencies with similar missions and goals, such as Memoranda of Understanding (MOU), regular working group meetings, joint solicitations, and other mechanisms. Examples of MOUs signed over the last two years include one on hydrogen with the Army Corps of Engineers and the Interior Department, one on off-shore wind, marine and hydrokinetic devices with the Interior Department, and an updated MOU with EPA on Energy Star.

¹The Board, as well as the Technical Advisory Committee and the annual solicitation, were established by the Biomass Research and Development Act of 2000, and later amended by Section 9001 of the Food Conservation and Energy Act of 2008.

Question 4. The FY12 budget request asks for significant increases to promote security, a cleaner environment, and a more robust economy. The EERE budget has 12 of those programs that I referenced above, ranging from Biomass to weatherization, yet I can find no evidence that the past increases in funding have resulted in transformative improvement. Perhaps the historic method of channeling funds through the myriad DOE offices and programs is not the most efficient and effective manner of developing and deploying near-term and applied research in energy efficiency improvements into the market where it can actually be tested in real applications and against real market realities.

Is there a better way to move energy efficiency improvements into the real world?

Answer. The Department believes that increases in funding for EERE have resulted in transformative improvements for better energy security, a cleaner environment and a more robust economy. It is because of past funding increases that many of EERE's investments in energy efficiency and renewable energy projects are technologies in the marketplace today. For example, a battery technology developed by our Vehicles Program is emerging in plug-in hybrid electric vehicles (PHEV) currently entering the market. LED lighting developed by the DOE is now also emerging in the marketplace. Additionally, wind and solar markets are growing at 30% annually, employing technologies developed and sponsored by DOE. While there is a clear time step between development of a technology and commercial deployment, EERE seeks to accelerate that stage of market adoption working with the DOE Loan Guarantee Program.

The improvements and achievements that have come out of EERE are not only due to record-breaking technological advances but also through the development of regulatory programs such as improved building codes and appliance standards. According to a study by the American Council for an Energy-Efficiency-Economy (ACEEE), "peak capacity reduction from existing DOE appliance standards is expected to reach 72 GW in 2010," or about 7 percent of the projected U.S. generating capacity.

A partial list follows of EERE's fiscal year 2010 successes that support our national imperative for greater security, a cleaner environment and a more robust economy:

Solar Technologies:

- Established Solar America Communities, a 25-city effort to rapidly increase the use and integration of solar energy in across the country.
- Set a world record: a 27% efficient single junction solar cell.
- Beat a previously held record (by 6.5%) by demonstrating a 18.5% efficient low-indium thin film (CIGS) solar cell.

Vehicle Technologies Program:

- Since 1993, Clean Cities coalitions and stakeholders have displaced nearly 3 billion gallons of petroleum, and are on track to displace 2.5 billion gallons annually by 2020.
- 'Clean Cities' deployment efforts accounted for more than 700,000 of the alternative fuel vehicles (AFVs) on the road in 2009.
- In August 2010, the number of U.S. alternative fueling stations topped 6,900, thanks to the coalition's role in improving alternative fuel infrastructure.
- Reduced cost of PHEV Lithium Ion battery to \$800 per kilowatt-hour—a 20% reduction from 2008 baseline of \$1000 per kilowatt-hour.

Fuel Cell Technologies:

- Deployed nearly 120 fuel cell lift trucks at four of its high-volume distribution centers across the country in collaboration with the Department of Defense Logistics Agency (DOD-DLA).
- As of February 2011, over 15,000 hydrogen indoor refuelings have been performed at the Susquehanna, Pennsylvania site.
- Lowered the cost for fuel cells sized for automobile use to \$51/kw (assuming volume production), down from \$275/kw in 2007.

Industrial Technologies Program:

- Set a world record by partnering with industry to build 35%-47% efficient small to medium gas engines for distributed power generation.
- Verified a steel blast furnace using 30% less energy than conventional designs.
- Partnered with Yahoo to create a data center operating with 25% less energy than conventional designs.

Biomass:

- Supported 29 integrated biorefineries in various stages of completion. Each DOE dollar leverages \$1.7 in private funding.

Buildings Technology Program:

- Supported the development of new standards for commercial buildings that are expected to result in a 22% reduction in the energy use of new commercial buildings.
- Supported the development of residential energy codes that are expected to reduce the energy used by new residential buildings by 30%.
- Issued eight appliance standards since January 2009 that will save customers \$260 billion dollars by 2030.

Federal Energy Management Program:

- Set a federal record: Implemented \$589 million in Federal Energy Savings Performance Contracts (ESPCs) that will result in savings to the taxpayer of over \$1.1 billion over the contract lifetime.

Geothermal Technologies:

- Demonstrated that geothermal brine can be a source of lithium and other strategic minerals that can be used in batteries.

Water:

- Launched 7 new hydroelectric facility upgrades—the first in 20 years.

Wind:

- Completed advanced computer designs of 3 highly innovative deep off-shore wind designs.

Question 5. If continuing to increase the funding through EERE is, in your opinion, the best approach, how do you propose that EERE will ensure us that these investments are the RIGHT investments?

Answer. EERE has a balanced portfolio of research, development, demonstration and deployment (RDD&D) programs aimed at improving the energy efficiency of our economy and increasing the productive use of domestic renewable energy resources. EERE programs provide a vital link between advances in basic research and the creation of commercially successful products and services. EERE does this by supporting a portfolio of strategic applied research and development projects, and identifying ways that national policies can create strong markets for innovations that can be deployed into widespread use by commercial enterprises, creating new businesses and jobs. EERE continues work with stakeholders to identify the strategies, plans, priorities and changes needed to produce the greatest energy savings and public value.

To ensure these are the right investments, EERE uses strategic analysis to identify and prioritize the most appropriate investments in our portfolio. This process incorporates an in-depth integrated review and shared vision of the applied energy programs. EERE strategically develops a portfolio of technically plausible and productive energy scenarios that meet U.S. energy demand while improving energy efficiency and reducing energy use and GHG emissions by more than 80 percent by 2050. Coupled with detailed technology-specific road-mapping and analysis, these investment decisions are also driven by a comprehensive set of economic, environmental, and energy security mandates.

Question 6. When energy efficiency standards and the subsequent testing and certification requirements affecting commercial food equipment are updated or changed, is the commercial food equipment (cooking, refrigeration, warewashing, etc.) industry consulted equally as part of DOE's outreach to stakeholder groups?

Answer. To the extent the equipment in question is covered by DOE's regulatory program, the stakeholders, including manufacturers, are consulted equally. In the case above, commercial refrigeration manufacturers and the trade organization that represents the majority of the industry (i.e. AHRI) are major stakeholders involved in both the historical and current rulemaking activities.

RESPONSE OF STEPHEN YUREK TO QUESTION FROM SENATOR BINGAMAN

Question 1. Mr. Yurek, you point out that negotiating consensus standards among stakeholders provides certainty about the outcome, avoids litigation, saves rule-making costs, and builds trust among organizations where trust did not exist before.

Some argue that Federal regulation of appliance efficiency is inappropriate government intrusion in the marketplace. After 25 years of this program, what do you believe the impact of these regulations has been on your industry, on job creation, and on the U.S. economy?

Answer. After 25 years of appliance efficiency programs, the manufacturers of heating, cooling and water heating products have learned to incorporate the necessary efficiency levels in their product design, and the mix of products offered to the consumer. Our industry, like many others, is concerned with the rulemaking process within the pertinent agencies. No industry can survive if its product requirements vary among the 50 states. In addition, stakeholder involvement in the rule-making process does not always lead to favorable regulations. Establishing efficiency levels through legislation allows for more stakeholder involvement and a more transparent process.

With a stable regulatory environment, our members are able to offer customers a choice of products, offering both minimum efficiency products and higher efficiency products for consumers who wish for even higher energy savings. Knowing the next regulatory benchmarks allows engineers to develop the next generation of heating and cooling equipment and allows manufacturers to plan for production.

Finally, the energy savings produced by minimum efficiency standards have saved money for electrical utilities and households alike. That is money that can be invested in other parts of the economy.

RESPONSES OF STEPHEN YUREK TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1. What are the major differences between moving an appliance standard through the regulatory process and the legislative process?

Answer. Broadly speaking, moving an appliance standard through the regulatory process is more restrictive and the scope of the regulation is very tightly defined as opposed to moving a standard through the legislative process. With legislation, an appliance standard can be created that applies beyond the boundaries of what the Department of Energy is legally allowed to do under EPCA. In the context of the AHRI consensus agreements, there is no regulatory pathway that can allow for the building codes provision that is contained in INCAAA.

Additionally, in the legislative process, stakeholders have the opportunity to come together and mutually agree to appropriate standards; this is unlike the regulatory process where the standards are initiated by the DOE and then stakeholders are allowed only to provide comments. Any regulation from an agency may change substantially from the proposed rule to the final rule regardless of stakeholder comments—the final rule is at the discretion of the DOE. The legislative process is a more transparent and direct process that allows for substantive stakeholder influence throughout.

Question 2. How was consensus achieved on the proposed standards and how do you define “consensus” in this context? Was consensus achieved in 2007, as it relates to the new standards for the incandescent bulb?

Answer. The proposed standards were agreed upon after roughly a year and a half of conversations and negotiations between HVAC and water heater manufacturers and environmental advocacy groups, such as the Alliance to Save Energy (ASE); the American Council for an Energy Efficient Economy (ACEEE); the Natural Resources Defense Council (NRDC); the California Energy Commission (CEC); and others. Consensus, in this context, is defined as a negotiated agreement between various parties but does not imply unanimity amongst all stakeholders.

Question 3. Please describe how your industry has been able to enjoy a \$2 billion positive balance of trade.

Answer. AHRI manages a strict voluntary certification program for HVACR and water heating manufacturers. Our stringent standards and exhaustive testing regimen are a source of industry pride. Due to these rigorous standards, it is more cost effective for manufacturers to produce their equipment and components in the United States and North America. The expense of shipping large and irregularly sized products has ensured that the majority of our products remain manufactured in the United States. As efficiency standards have increased so has the size of the equipment and the sophistication of the testing procedures, leading our members to invest in US based manufacturing distribution facilities.

Question 4. What opportunities do we have to ensure that manufacturing jobs, such as those you represent, stay in the United States?

Answer. The best way to promote domestic manufacturing is to support policies that ensure the United States remains a highly attractive place to run a business. There are numerous opportunities to achieve this goal including: promoting a progressive international trade policy that will open global markets while reducing tariffs and regulatory barriers; supporting domestic tax policies that are favorable for manufacturers; supporting health care reforms that drive down costs to businesses; and supporting a regulatory environment that balances compliance costs and benefits of regulation while providing certainty for manufacturers.

Question 5. Please describe whether Federal standards on appliances help or hurt American manufacturers.

Answer. In 1987 President Reagan signed the National Appliance Energy Conservation Act (NAECA) into law. Among other provisions, this legislation amended EPCA to strengthen federal preemption by making it much more difficult for a state to obtain a preemption waiver for appliance standards. Federal standards generally help manufacturers by providing a uniform regulatory environment for businesses to operate in therefore avoiding a patchwork of regulations that varies from state-to-state.

RESPONSES OF STEPHEN YUREK TO QUESTIONS FROM SENATOR PORTMAN

Question 1. I think one of the largest barriers to wide-spread deployment of energy efficiency technologies on both the industrial/commercial side and the residential side is education. As a consumer it is pretty difficult with the tools available to us today to wrap your head around how much energy you use in a day or a year, and then it is even tougher to figure out how much a certain energy efficiency technology can save eventually save you. I believe this uncertainty makes it hard for a consumer to commit to investing the upfront money in energy efficiency technology, and I think it is one of the reasons why so many get concerned when governments talk about mandates on energy efficiency. Simply put, the uncertainty leaves a lot of money on the sidelines. Do you agree? If so, what is the solution?

Answer. It is ironic, that in today's "Information Age" consumers are often overwhelmed by the amount of information available to them, sometimes leading to a paralysis in the decision making process. Through AHRI's certification program, our industry certifies that the products manufactured meet the advertised energy efficiency. Using AHRI's website, a consumer or contractor can easily input the required information and see the energy consumption data of the heating, cooling or water heating product. The information provided will tell the consumer if the equipment simply meets the federal efficiency minimums or exceeds them, qualifying for any potential tax credits.

Question 2. How do we develop metrics for consumers to base their decisions that is accurate across many different consumers, environments, and scenarios?

Answer. The strength of S.398, which is based on a consensus agreement signed by HVACR manufacturers and energy efficiency advocates, are the regionally based standards for heating and cooling products. Traditionally, one national minimum standard was applied to heating and cooling products. Based on a NOAA formula, stakeholders used Heating Degree Days from each state in order to divide the country into three regions. Using HDD average within these regions, we negotiated appropriate efficiency levels for central air conditioning, heat pumps and furnaces. This ensures that no unnecessary efficiency burden is placed on consumers who may not have a great need for heating or cooling, depending on where they live. Consumers will be able to purchase HVAC equipment knowing that the minimum efficiency is appropriate for their local heating and cooling needs.

APPENDIX II

Additional Material Submitted for the Record

March 9, 2011.

Hon. JEFF BINGAMAN,
Hon. LISA MURKOWSKI,
Energy and Natural Resources Committee, 304 Dirksen Senate Building, Wash-
ington, DC.

DEAR CHAIRMAN BINGAMAN AND RANKING MEMBER MURKOWSKI: Consumers Union,¹ Consumer Federation of America, National Consumer Law Center, Public Citizen and National Consumers League strongly support efficiency standards for lighting, appliances, electronics, buildings, and vehicles. We commend you for your leadership and effective bipartisan efforts to promote energy efficiency. Because of the cost savings for consumers and general public benefits of current lighting standards, we oppose current efforts to repeal lighting standards scheduled to go into effect on January 1, 2012.

Minimum efficiency standards provide basic assurance of efficient performance for many significant consumer purchases. Efficiency standards have enhanced the numerous lighting options for consumers to choose from, as inefficient models have been scheduled to phase out of the market and new options to replace them have been developed. The new standards are estimated to save consumers billions of dollars in energy costs over the coming years. Depending on the technology selected, consumers can save between \$20 and \$90 per 100W fixture by selecting a more efficient bulb, as shown in the chart below.

Type of bulb	Watts	Cost/bulb (longevity) ²	Operating cost over 10,000 hrs ³	Total cost over 10,000 hrs	Consumer savings over 10,000 hrs
Traditional Incandescent	100	\$.75 (1,000 hrs)	\$115	\$122.50	Baseline cost
Efficient Incandescent (halogen)	72	\$2.00 (1,000 hrs)	\$82.80	\$102.80	\$19.70
Compact fluorescent (CFL)	26	\$1.50 (6,000 hrs)	\$29.90	\$32.90	\$89.60
Solid State Lighting ⁴ (LED)	13	\$.50 (50,000 hrs)	\$14.95	\$64.95	\$57.55

²Performance based on manufacturer projections. Products in use are likely to see variation.

³Assumes national average of 11.5 cents/kWh.

⁴100-Watt replacement: LEDs are still in development and may not yet meet 1600-lumen equivalency. Lighting fact labels will be required beginning in 2012, which will enable consumers to verify equivalency.

Another way of looking at the consumer savings is how quickly efficient bulbs would pay for themselves and start providing consumers a return on their investment. If a consumer replaced one 100-watt incandescent (\$0.75) with one 72W efficient incandescent (\$2), payback would accrue approximately one-third of the way through the life of the bulb, in about 388 hours or 6 months, assuming the bulb

¹Consumers Union of United States, Inc., publisher of Consumer Reports®, is a nonprofit membership organization chartered in 1936 to provide consumers with information, education, and counsel about goods, services, health and personal finance. Consumers Union's income is solely derived from the sale of Consumer Reports®, its other publications and services, fees, noncommercial contributions and grants. Consumers Union's publications and services carry no outside advertising and receive no commercial support.

is used 2 hours/day. If the consumer instead selected a 26-watt CFL (\$1.50), the savings would begin after a mere 88 hours of usage, and the benefits would accrue long beyond that due to the longer bulb life. For a 13W LED (\$50) replacement, savings would begin much later, after 4,625 hours, but the savings over the life of the bulb are significant at \$487.75, and the purchase price of LED bulbs is expected to drop significantly.

Improving safety throughout the lifecycle of a product is also very important, and Congress should develop a comprehensive recycling program for light bulbs, particularly CFLs, in order to recapture mercury or other possible toxics used in new light bulbs and prevent them from contaminating landfills. Recycling programs may also be required for LEDs as we learn more about the toxic materials present. However, it is important to note that CFLs save between 2 and 10 times more mercury from the environment than is used in the bulb because their efficiency avoids mercury pollution that would otherwise be emitted from coal-fired power plants.

Well-designed efficiency standards have helped drive the market towards higher quality, more innovative technologies that cost less for consumers to operate over the life of the product. Efficiency standards also help lower costs of new energy efficient technology by providing economies of scale. The result is higher efficiency products that are more affordable to own and operate and more widely available.

In 1999, the CFLs Consumers Union tested cost \$9 to \$25 per bulb. In contrast, those tested in 2010 only cost \$1.50 to \$5 per bulb, had shown marked improvement in performance, and provided significant cost savings to consumers. Largely as a result of efficiency standards, refrigerators now use 70% less energy than they did thirty years ago, despite the fact that the average cost has declined and enhanced features have multiplied. Another dramatic example of the benefit of efficiency standards has been increasing fuel economy standards for vehicles, which have saved consumers billions of dollars in fuel costs.

Efficiency standards are also important because they provide a host of public benefits in addition to those accrued by individual consumers. It is often the case that some choices are pre-determined for consumers in the built environment. Utility ratepayers, especially renters and new homeowners, often move into homes where they did not select the lighting or appliances in the home. Improved minimum standards of efficiency help curtail the utility bills they must pay when they did not have the option to select cost-effective efficiency measures that would benefit them. Lower utility bills and decreased energy demand help all consumers and ratepayers by taking pressure off the power grid, decreasing the need for more power plants, and decreasing pollution in their communities.

We strongly believe that Congress should continue to move efficiency standards forward, not backward. We will continue to provide guidance for consumers in comparing new lighting options and understanding new lighting labels. We thank you again for your commitment to energy efficiency that benefits consumers and urge you to oppose any repeal of lighting efficiency standards.

We thank you for your attention to this important consumer matter.

Sincerely,

SHANNON BAKER-BRANSTETTER,
Consumers Union.

SALLY GREENBERG,
National Consumers League.

MEL HALL-CRAWFORD,
Consumer Federation of America.

TYSON SLOCUM,
Public Citizen.

CHARLIE HARAK,
National Consumer Law Center, on behalf of its low-income clients.

NATIONAL ASSOCIATION OF STATE ENERGY OFFICIALS,
Alexandria, VA, March 9, 2011.

Hon. JEFF BINGAMAN,
Chairman.

Hon. LISA MURKOWSKI,
*Ranking Member, Senate Energy and Natural Resources Committee, 304 Dirksen
Senate Building, Washington, DC.*

DEAR CHAIRMAN BINGAMAN AND RANKING MEMBER MURKOWSKI: On behalf of the National Association of State Energy Officials (NASEO) we wish to express our strong support for the Implementation of National Consensus Appliance Agreements

Act of 2010 (S. 398), which reduces the regulatory burden on appliance manufacturers while reinforcing appliance standards. We also encourage your continued support for the bipartisan Energy Independence and Security Act of 2007 lighting provisions, which are helping move the market toward more innovative and economically efficient options for consumers.

We strongly support S. 398's provisions and strengthening of national energy efficiency standards for refrigerators, furnaces, and other appliances. Improved standards save consumers money, allow for the more efficient use of resources, and improve the nation's competitive position overall. The bill's flexible approach aids manufacturers in meeting standards and allows industry to innovate while reducing waste and energy costs. This type of energy policy approach is foundational to the economic prosperity of the United States. This bill is among the most powerful and practical means to provide consumers with options to operate their homes and businesses more efficiently and at lower costs.

In addition, NASEO encourages your support for continuing the important transformation already underway in adopting more innovative lighting solutions as envisioned in the bipartisan Energy Policy Act of 2007 signed by President Bush. Moving the nation from a technology that is more than 100 years old and in the "rear-view mirror" of our global competitors to more modern lighting solutions that offer broad economic benefits at lower costs benefits our states' economies and the nation. NASEO and our 56 State and Territory members share the committee's goal to strengthen the nation's economy through sound energy policy advances. We are encouraged by the thoughtful policies contained in S. 398, and we pledge to work with you to advance this important work.

Sincerely,

DAVID TERRY,
Executive Director.

STATEMENT OF KATERI CALLAHAN, PRESIDENT, THE ALLIANCE TO SAVE ENERGY

On behalf of The Alliance to Save Energy, I would like to thank you for the opportunity to provide comments on the many benefits S.398, the Implementation of National Consensus Appliance Agreements Act of 2011 and on the harm to the nation that would result from repealing the earlier standards on lighting via S.395, the Better Use of Light Bulb Act.

The Alliance to Save Energy is a non-profit coalition of business, government, environmental and consumer leaders. We support energy efficiency as a cost-effective energy resource under existing market conditions and advocate energy-efficiency policies that minimize costs to businesses and to individual consumers. Energy efficiency is America's cleanest, fastest, cheapest, and most abundant energy resource.

It is vital to the future of our energy system that this committee put its full support behind INCAAAA. This bill would codify the consensus appliance standards created by the appliance manufacturers, efficiency advocates, states and consumer groups. It contains improved standards for HVAC systems, including furnaces, heat pumps and air conditioners, which take advantage of the latest technologies and efficiency potential. It also would improve standards for many currently covered home appliances, such as refrigerators, freezers, clothes washers, dryers, and dishwashers to maximize cost-effective energy savings. In addition, it would create new standards for some previously overlooked products, including some inefficient types of outdoor lighting.

Our colleagues at the American Council for an Energy-Efficient Economy estimate that INCAAAA would, by 2030, save the United States about 850 trillion Btus of energy each year—roughly the energy use of 4.6 million homes. That's more energy than was used by the entire state of Connecticut or West Virginia in 2008. According to these estimates, the net economic savings to consumers would be \$43 billion through 2030. Because consensus appliance standards have historically enjoyed bipartisan support, INCAAAA presents an opportunity for Congress to achieve real savings for taxpayers while increasing business competitiveness—a win, win in today's economy.

While wide-reaching, the bill covers a specific list of products:

- Residential appliances—refrigerators, freezers, clothes washers, clothes dryers, dishwashers and room air conditioners
- Residential heating, cooling, and water heating equipment—furnaces, central air conditioners, heat pumps, water heaters, heat pump pool heaters and service over the counter refrigerators; and
- Drinking water dispensers, hot food holding cabinets and portable electric spas.

In addition, the agreements include some important changes to improve and expedite the Department of Energy appliance standards program, and needed technical corrections to standards enacted in 2005 and 2007.

INCAAA represents the sixth set of consensus standards to come before Congress to date, the first of which were signed into law by President Reagan in 1987 and again in 1988, followed by standards signed into law by President George H.W. Bush in 1992 and President George W. Bush in 2005 and 2007. INCAAA builds on the success of existing standards, which according to analysis by ACEEE have created over 340,000 net jobs.

As you can see from the numbers I have cited, the appliance standards program is critical for improving energy and economic efficiency. In 2010 alone, appliance standards reduced national non-transportation energy use by 7 percent more than the annual energy consumption of the state of New York. Enactment of S. 398 will reduce energy use, save consumers money, improve the environment, and create new jobs.

The Alliance would also like to strongly urge the committee to reject S.395. The standard would not ban incandescent bulbs as it has been reported; it merely requires bulbs to meet a minimum level of energy efficiency, a common requirement for many appliances. The standard has already spurred innovation in the field of advanced lighting technologies. General Electric, Phillips, and Sylvania have all developed advanced incandescent light bulbs that are now available on the market that meet the standard—years in advance.

The new standards expand consumer choice. In addition to the new energy-efficient incandescents, consumers will also be able to choose from CFLs and LEDs. Those choices will give consumers a myriad of lighting options that meet their color, brightness and other light bulb preferences while using less energy.

Ninety percent of the energy in traditional incandescent bulbs is wasted as heat. The standard will save more than \$10 billion / year (roughly the same as all homes in Texas combined). Many of these new advanced incandescent bulbs and florescent bulbs are made in the US or made of US-manufactured components.

Over the course of 30 years, the more efficient lighting is expected to:¹

- Provide electric bill savings of more than \$10 billion per year (roughly the same as all homes in Texas combined)
- Provide energy savings equivalent to the production of 30 large power plants; and
- Mitigate global warming pollution of approximately 100 million tons of carbon dioxide per year

By approving S.398 and rejecting S.395, the Committee will advance the United States as an international leader on energy efficiency. Additionally, these actions will help to save thousands of jobs as well as billions of dollars in energy costs based on the research cited above. I urge the committee to vote in favor of achieving savings for taxpayers through energy efficiency.

Thank you for your consideration of my testimony.

THE HOME DEPOT,
March 9, 2011.

Hon. JEFF BINGAMAN,
U.S. Senate, 703 Hart Senate Office Building, Washington, DC.

DEAR SENATOR BINGAMAN, The Home Depot is the largest supplier of lighting in the United States. Since the enactment of the Energy Independence and Security Act of 2007, we have been diligently working with our manufacturing partners to offer consumers innovative and cost-effective alternatives to incandescent bulbs and will continue to develop new products such to help our customers save money and energy. We're particularly excited about our offerings in LED and high-efficiency incandescent bulbs.

The Home Depot has partnered with leading LED manufacturers including Philips, Lighting Science Group and Cree enabling us to be the first in the market to offer cost-effective and most technologically advanced LED bulbs available. LED bulbs are the next generation in lighting—using up to 50 percent less energy than CFLs and up to 85 percent less energy than traditional bulbs without sacrificing light quality. In addition to being energy-efficient, their life is much longer, cutting down both operating costs and inconvenience of maintenance. LEDs also dim, have

¹NRDC, *Shedding New Light on the U.S. Energy Efficiency Standards for Everyday Lightbulbs*, <http://www.nrdc.org/energy/energyefficientlightbulbs/files/SheddingNewLightFS.pdf>.

no potentially dangerous mercury and great color. LED bulbs have been available in all The Home Depot stores since September 2010.

California began a multi-year phase-out of incandescent bulbs in January 2011. Home Depot associates in the lighting departments at all 232 California stores have received specified training to provide the best service and information to our customers. Additionally, we developed special signage for California stores with information about their lighting options.

While it is too early to know how consumers nationwide will respond to the phase-out, The Home Depot has seen a very positive response to our growing suite of energy efficient lighting options. Please see the enclosed document for more on the options currently available to customers.

We would be happy to provide additional updates as more information from the marketplace becomes available.

Sincerely,

KENT KNUTSON,
Vice President, Government Relations.

ATTACHMENT.—LIGHTING OPTIONS

LED

A LED is a light emitting diode capable of illuminating any space in your home while dramatically reducing maintenance and replacement costs. Replacing standard light bulbs with energy efficient LED bulbs will bring you immediate savings on your electricity bill. LED bulbs supply just as much light as your old bulbs but use far less electricity. In fact, the innovative technology uses up to 85 percent less energy than incandescent bulbs, and up to 50 percent less energy than CFL bulbs. The lights are reliable, safe and durable with no moving parts, and generate a high level of attractive brightness. LED bulbs also have an exceptionally long life expectancy that is 100 times longer than incandescent bulbs. Each bulb can last up to 100,000 hours, or 11.42 years. The Home Depot offers a proprietary brand of LEDs under the EcoSmart name, including a bulb that retails for \$17.97 and is a 40W equivalent, offering 429 lumens with a 50,000 hour expected lifetime, or 40 years, making it the most affordable bulb of its kind in the market to date.

CFL Light Bulbs

CFLs, or compact fluorescent lights, are an ideal low-energy bulb for those environmentally-conscious consumers who are also looking to save money on their energy bills. CFL bulbs emit the same amount of light as traditional bulbs, but use 75 percent less energy. These bulbs also last approximately 10 times longer than incandescent bulbs, a total of seven to nine years, and pay for themselves in just three to six months. Over the lifetime of the bulb, each CFL can save you up to \$30 of energy costs. (Note: The Home Depot also is among the few retailers to offer a CFL recycling program)

High-Efficiency Incandescent Bulbs

The first high-efficiency incandescent bulbs to emerge have been Philips Eco Vantage Line. While bulbs cost \$1.50 each, the bulbs also pay for themselves since they last three times as long and are 30 percent more efficient. A 70-watt Eco Vantage Energy Saver, available at The Home Depot, provides the same amount of light as a traditional 100-watt incandescent bulb. We also carry a Phillips 60-watt equivalent that is 800 lumens. Researchers have been able to produce incandescent light bulbs with up to 50 percent efficiency, so expect more innovation here, soon.

For more information, please visit www.homedepot.com/lighting

INTERNATIONAL BOTTLED WATER ASSOCIATION,
Alexandria, VA, March 9, 2011.

Hon. JEFF BINGAMAN,
Chairman, U.S. Senate Committee on Energy and Natural Resources, 703 Hart Senate Office Building, Washington, DC.

Hon. LISA MURKOWSKI,
Ranking Member, U.S. Senate Committee on Energy and Natural Resources, 709 Hart Senate Building, Washington, DC.

DEAR CHAIRMAN BINGAMAN AND RANKING MEMBER MURKOWSKI, The International Bottled Water Association (IBWA) supports S. 398, the Implementation of National Consensus Appliance Agreements Act of 2011 (INCAAA), that includes energy efficiency standards and test procedures for bottle-type water dispensers.

IBWA is the national trade association representing all segments of the bottled water industry including spring, artesian, mineral, sparkling, well, groundwater and purified bottled waters. Founded in 1958, IBWA's approximately 750 member companies in the United States and throughout the world include bottled water dispenser manufacturers, bottlers, suppliers, and distributors.

The bottle-type water dispenser standards and test procedures proposed in S. 398 will aid manufacturers by adopting a uniform national standard across the country, instead of state standards which can vary slightly from state to state. The national standard will save a substantial amount of energy and reduce consumer operating costs while simultaneously providing consumers with a range of efficient products. IBWA is committed to environmental sustainability and reducing the industry's environmental footprint, which is already one of the lowest in the beverage industry.

Thank you for consideration of our comments. Please do not hesitate to contact us if you have any questions or if we can ever be of any further assistance to you.

Sincerely,

JOSEPH K. DOSS,
President & CEO.

NATIONAL ASSOCIATION OF MANUFACTURERS,
ENERGY AND RESOURCES POLICY,
April 11, 2011.

DEAR CHAIRMAN BINGAMAN AND RANKING MEMBER MURKOWSKI:

The National Association of Manufacturers (NAM) thanks you for introducing S. 398, the Implementation of National Consensus Appliance Agreement Act of 2011 (INCAAA) and your leadership. We submit this letter in support of this measure.

By way of background, the NAM is the largest manufacturing association in the U.S., representing over 11,000 small, medium and large manufacturers in all 50 states. We are the leading voice in Washington, D.C. for the manufacturing economy, which provides millions of high-wage jobs in the U.S. and generates more than \$1.6 trillion in GDP. In addition, two-thirds of our members are small businesses, which serve as the engine for job growth.

Our mission is to enhance the competitiveness of manufacturers and improve American living standards by shaping a legislative and regulatory environment conducive to U.S. economic growth. While the Manufacturers support environmental regulations designed to protect the environment and public health, we consistently oppose regulations that create adverse economic impacts on manufacturing without providing any real environmental or public protection.

The manufacturing sector of American society has much to gain from efficiency measures. Manufacturers use one-third of our nation's energy and are directly affected by the cost of energy in making products as well as by the cost of maintaining office operations. It is widely acknowledged that energy efficiency offers immediate and cost-effective opportunities to cut these costs. Therefore, we support S. 398, the Implementation of National Consensus Appliance Agreement Act of 2011 as it provides regulatory certainty while creating rigorous energy efficiency standards.

Again, the NAM thanks you for introducing S. 398, The Implementation of National Consensus Appliance Agreement Act of 2011, and your leadership on this issue.

Sincerely,

MAHTA MANDAVI,
Director.